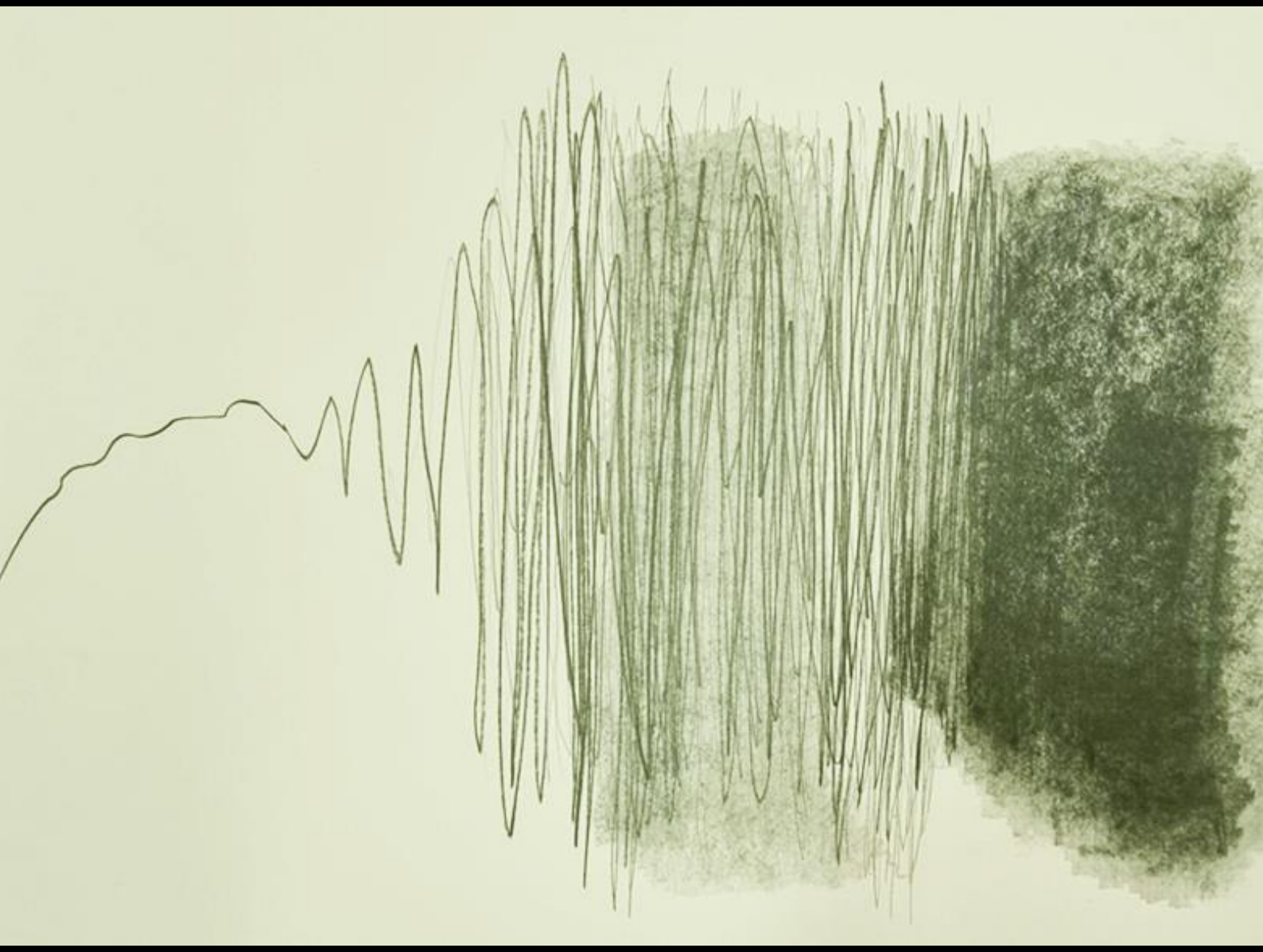
Hartmut Winkler



Condensation

Essays on media theory and the logistics of signs

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Content

1 Introduction

Media are a notoriously difficult subject. On the surface, they form a dazzling, fascinating, diverse, and overwhelmingly complex topography that is moreover subject to constant change. Media studies picks out individual phenomena from this topography in order to describe, to analyze, and to understand them – and that is certainly difficult enough in itself.

Media theory, I think, has a different task. Media theory operates in the realm between different media. It tries to find – or develop – the concepts that allow us to see both the similarities and the differences between them. Are there rules and regularities beneath the ambiguous and dazzling surface? How can the functioning of media – in general – be described? What properties characterize them? What distinguishes media from other social apparatuses?

In Germany, there has been – particularly following in the wake of Friedrich Kittler – a lively discussion on questions of media theory. This volume collects some of my own contributions to this debate, which were initially printed in German and are now being published in English for the first time.

The texts oscillate between media theory, technology, cultural theory, and semiotics; and the central thesis is that media – before anything else – are defined by their involvement in symbolic processes. *Media*, that is my basic assumption, *form the biotope for semiosis*. Media allow for symbolic operations in the first place. They are the basis and framework for the formation of signs (very different kinds of signs), for their social circulation (their logistics), and the laws of their functioning. And media theory, I think, has the task of describing these interrelations as clearly as possible.

But what does 'symbolic' mean, and what is a 'sign'? In the long history of the discipline, semiotics is associated with the names of excellent authors and has produced crucial texts, but at the same time – as hard as it is to say – has hardly provided any concepts with which a theory of media could actually work.

It is certainly plausible that writing consists of 'signs,' and language of isolable, semantic units. But does the same apply to photography and film? And do the formal languages of computers indeed work with signs that have no meaning, no semantics? How do signs circulate through the veins of society? What is the relationship between semiotics and hardware/technology? A media theory that wants to rely on semiotic categories should know all this.

No one can solve all these problems in one fell swoop, but some answers are still possible. In the following, I will present some thoughts that I have developed over the years. And at the center of my considerations is – as the title indicates – the concept of *condensation*.

The problem is how signs emerge, how they acquire 'meaning,' how, on a macro level, new media and new technologies come into being. Astonishingly enough, these questions are rarely posed in media studies. Most scholars ask about *the impact* of new media. But media, I would object, are not only a prerequisite for symbolic practices. They are just as much – and this complicates matters – their *result*. So how can we understand change as a *bottom-up process,* caused by the actions of the many?

The notion of condensation – adopted from psychoanalytical theory – attempts to capture the scandalous point at which *the infinite quantity of discourse events turns into structure,* into the system of language (or symbolic systems in general).

The idea itself, as I will show, has already been advocated by renowned authors. For the conviction that it forms the organizing center of media functioning, of symbolic processes, I claim originality.

The earliest text presented here dates from 1989, the latest was written in 2023. Parallel to this collection, I am introducing some chapters of my book 'Ähnlichkeit' [Similarity] in English, which was printed in German in 2021.[1] The two projects complement each other: While the focus here is on the media-theoretical framework, those interested in an elaboration on semiotics will find it in 'Similarity.'

I would like to thank the University of Paderborn and the Institute for Media Studies, which provided the framework for my research, Lisa Boelinger for editing most of the translations, and my wife, Daniela Sannwald, for all her support.

[1] Winkler, Hartmut: Similarity. Mosaic Pieces for a Media Semiotic 2.0.
Web publication 2024: https://homepages.uni-paderborn.de/winkler/Winkler--Similarity.pdf.
In German the book was printed by Kadmos, Berlin:
https://www.kulturverlag-kadmos.de/programm/details/aehnlichkeit;
the text is available online: https://homepages.uni-paderborn.de/winkler/Winkler--Aehnlichkeit.pdf.

2 Discourses, Schemata, Technology, Monuments - Outline for a Theory of Cultural Continuity [1]

1. Introduction: Acts versus Deposits – Two Media-Theoretical Paradigms

Few phenomena in media studies have been given as much sustained attention as writing, the various types of material depositing,[2] and media technologies, which remain a problematic central concern for all media theories. In the following, I would like to introduce a model that attempts to solve various problems within the fields of media and cultural studies in a systematic way. The model is not new; it resurfaces in widely disparate theories, and I have in fact argued for it in some of my own writings in the past.

What is new is that I now introduce it as a *model* in a compressed and abstracted form, and as a key for the understanding of certain problems that would otherwise appear different or puzzling or would remain altogether invisible. The model is, at first glance, so simple as to appear almost trivial. I will proceed by first introducing the background of the investigation, and then the model itself. In a series of additional steps, I will consider both the analytical reach and certain limitations of the model, eventually attempting to arrive at some sort of summary. I will be able to demonstrate the plausibility and limitations of this approach only in layered form: by playing through a set of media problems that seem to have little in common, and by playing through different media that appear to be of different conceptual orders. The main contribution of this particular approach, as I see it, is that it is able to relate these heterogeneous questions at all. Its 'abstractness' creates a platform for media- and theory-based comparisons and a kind of switchboard that makes it possible for me to give much of my own research a kind of organizational center.[3] (Besides, my model is good against smallpox, diphtheria, and bad weather.)

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[1] Main chapter of my book: Winkler, Hartmut: Diskursökonomie [Economy of discourse]. Frankfurt a. M.: Suhrkamp 2004, chapter 6 'Speichern, Verdichten,' pp. 110-130. The German text is available online: https://homepages.uni-paderborn.de/winkler/Winkler--Diskurs%C3%B6konomie.pdf.
The English version was published in: Configurations, Nr. 1, 2002, pp. 91-109 (translated by Geoffrey Winthrop-Young and Michael Wutz).

[2] Translators' note: In consultation with the author, we are using *deposit/depositing* to translate *Niederlegung* (derived from the verb *niederlegen*, which, depending on the context, can mean 'to lay down,' 'to put down,' 'to deposit,' or 'to record').

[3] The desire to give myself such methodological self-clarification was the occasion for writing the present essay. My book Docuverse contains most of the Observations articulated here; there, they are located within the project of the book, which attempts to formulate (an, as far as possible, immanent) critique of the present computer discourse: Winkler, Hartmut: Docuverse: Zur Medientheorie der Computer (Munich: Boer, 1997). The text of the book is available online: https://homepages.uni-paderbom.de/winkler/Winkler--Docuverse.pdf.

The starting point for the model is the question of how discourses organize their continuity. Basically, media can be considered from two perspectives: They are understood by some as a fluid discourse, as a link among actions. Such an approach focuses on communicative *acts* and, since these acts are tied to human actors, it focuses necessarily also on humans, the carriers of these communicative actions. As a result, this approach has been labeled 'anthropological media theory.'

By contrast, other approaches center on writing, on *technology* or other forms of material depositing. They derive their legitimation from the controversial question whether media – as part of a larger sociotechnological environment – can indeed still be adequately grasped as a 'means' (e.g., of communication) from the perspective of 'the human,' in terms of functional purpose or consciousness. If the development of technology is seen, at least in part, as an autonomous process that extends the blind evolution of nature, then we can do no more than trace the consequences of this evolution for social formations and the positioning of the individual. These theories represent the enlightened mainstream of media theory since the eighties and have, in the wake of Michel Foucault, been labeled 'discourse analysis,' or 'techno-centered' by their opponents.

Both approaches have their defenders, who argue vigorously and in almost as polarized a fashion as I have just sketched them. Naturally, there are many attempts at mediation. Beginning with the example of a single medium,[4] or under the iridescent banner of a 'media culture,'[5] some approaches recognize polarization as a problem. Nevertheless, up to this point, polarization could not be done away with. Paradoxically, both approaches are undoubtedly *right*. Leaving aside their historical and philosophical premises, we are dealing with the radicalization of two perspectives that could be merged merely through a theoretical effort on the terrain of a valid theory of media. To develop a sketch in that direction is the first goal of the model introduced here.

Theoretically, as noted above, we are dealing with the question of how discourses establish continuity.[6] As chains of discrete communicative events, discourses, one might think, are in constant danger of disruption or abrupt changes in direction. Several media theories, indeed, among them such prominent ones as that of Niklas Luhmann, understand discourses as chains of discrete events and from the perspective of 'connectivity.'[7] Observation, however, indicates that discourses are astonishingly continuous and rather resistant to changes. Below the surface of harried innovation they resist de facto innovations with considerable inertia.[8] In my judgment, the central puzzle in the functioning of medial discourses is not 'connectivity' or

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[4] In regard to TV, for example, Raymond Williams discusses the question in terms of a general theory of technology in 'The Technology and the Society,' in: Id.: Television: Technology and Cultural Form. London: Routledge, 1992, pp. 9-31.

[5] See, for example, Pias, Claus et al. (eds.): Kursbuch Medienkultur: Die maßgeblichen Theorien von Brecht bis Baudrillard. Stuttgart: Deutsche Verlags-Anstalt, 1999, p. 8.

[6] In the following I use various terms of discourse: (1) The common conception of discourse as the totality of all acts of utterance, both oral and written: "Discourse is [all of] a person's realized linguistic utterances based on his or her language competency in the process of linguistic communication" (adapted from Duden Fremdwörterbuch, Mannheim: Dudenverlag, 1974, p. 182). (2) More generally, 'discourse' frequently designates the totality of symbolic practices, as when visual discourse is juxtaposed to linguistic discourse. (3) In the work of Foucault, the term 'discourse' encompasses utterances as well as practices-for example, the construction of prisons and the formation of the body through torture or drill. At the same time, Foucault's 'discourse' designates a specific epistemological process; this epistemological process is claimed by the discourse-analytical approaches.

[7] See: Luhmann, Niklas: Social Systems. Stanford, Calif.: Stanford University Press, 1995, p. 36.

[8] Horkheimer and Adorno have notably drawn attention to this inertia. Rather shocked by their exposure to American mass culture, they spoke of the "constant sameness [that] governs the relationship to the past" (Horkheimer, Max; Adorno, Theodor W.: Dialectic of Enlightenment [1944]. New York: Herder and Herder, 1972, p. 134).

unforeseeable 'articulation,'[9] but this capacity for inertia.

The nature of our inquiry, therefore, relates to what I like to call an *economy* of discourses that combines the unforeseeable chains of acts of utterance with moments of *inertia.*

Discourses organize their changeability, and we would fail in our inquiry were we to ignore such real changes and irruptions. At the same time, however, discourses also organize the 'weight,' as it were, with which they offer resistance to such changes. To date, we have no model that mediates between these two. My argument is that such a model would be a variation of the question about 'technology-centered' and 'anthropological' media theories.

2. Monuments and Repetitions

A particularly suggestive approach to describing such mechanisms of continuation was developed by Jan Assmann.[10] Through the example of ancient Egypt, he demonstrates the existence of – and here I introduce another binary structure – basically, two polar cultural techniques that are capable of stabilizing and continuing discourses: monuments and repetitions. In the case of ancient Egypt, Assmann observes, two modes of life were juxtaposed to each other: on the one hand, hieroglyphic writing and the architectonic funereal monuments, built from stone and with the assumption of, quite literally, eternal duration; on the other hand, the more transient living quarters built from clay, changeable cursive writing, and daily routines that (analogous to the rhythms of the Nile) were seen in terms of a cyclical structure.

In more general form, this model has its origins in the research into orality: while writing cultures invest in material deposits and juxtapose the monumental duration of the writing medium to a transient temporality, oral cultures are vested in repetition and ritual. From a contemporary perspective, this is a technique of cyclical rejuvenation, which, as Friedrich Nietzsche put it, literally burns memory into humans.

What is irritating in the work of Assmann, as it is in the scholarship of orality, is that the two techniques are juxtaposed to one another and are put into the service of cultural continuation without insisting on or demonstrating a systematic connection between them. This is all the more puzzling given that the theory of writing maintains that the monumentality of writing can *substitute* the mechanisms of oral repetition: as soon as a culture adopts the technique of writing, it devalues ritual repetition and, to a certain degree, relieves human memory from the burden of having to provide continuity. If the model of repetition, however, can be replaced by the monumental one, such a replacement points – beyond a functional parallel – to a structural similarity or a systematic relationship.

3. The Relationship between Monument and Repetition

In the following, I would like to focus on this relationship. Initially, monuments and repetitions are far apart. Once a monument is erected, it wants to persist. It plays off its material solidity and persistence against the change of daily routines. The cultural significance of the Cheops pyramid may have changed profoundly – migrating from the realm of ritual to that of tourism – but it has occupied one and the same piece of property for the last forty-seven hundred years. Certain daily practices are, therefore, marked out in advance. Just as the architecture of a city predetermines and stabilizes the paths of its inhabitants, so daily routines surround the monuments and seek their orientation through them.

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[9] Within the current media debate, this term has gained considerable currency.

[10] Assmann, Jan: Stein und Zeit. Das ‚monumentale' Gedächtnis der altägyptischen Kultur. In: Hölscher, Tonio (ed.): Kultur und Gedächtnis. Frankfurt am Main: Suhrkamp, 1988, pp. 87-114. See also: Assmann, Jan: Stein und Zeit: Mensch und Gesellschaft im alten Ägypten. Munich: Fink, 1991.

Repetitions, by contrast, are in much greater jeopardy. Frequently, they can achieve continuity only by securing the identity[11] of repetitive acts through repressive means: each tradition has its guardians, priests, and authorities, and if Egypt managed to maintain its hieroglyphs in unaltered form for thousands of years, it could do so only through an extremely repressive scribal culture that did not tolerate deviations and adaptations to the historical moment.[12] Aside from repression, the stability of repetitive cycles can be explained (as is already observable in the animal world) through habit, the proclivity for repetition and schemata, as well as the economy that comes with such repetition. Initially, therefore, repetition and monument fall apart.

At a second glance, however, things begin to get interesting. We note that the monument (paradoxically) harbors within itself an element of repetition, and that repetition (again, paradoxically) harbors within itself an element of monumentality. The material persistence of the monument initiates a series of encounters with that monument. Over centuries, a written text can be read by tens of thousands of readers who take it in hand and integrate it into their lives; select readers may read it repeatedly. Its material durability asserts itself, above all, by bringing about a certain type of repetition that creates a kind of center of gravity for that repetition; this center of gravity forces the repetitive act to, in fact, return in cyclical fashion to a describable point. Seen from a practice-based point of view, the monument operates as a machine that produces this particularly stable type of repetition.

Conversely, repetition too contains an aspect of monumentality. Repetition can take place only if the two acts of repetition are conjoined through an instance that in itself has a monumental (or quasi-monumental) quality. In the case of oral societies, this is the human memory, which – while requiring cyclical rejuvenation – is capable of storing the to-be-repeated pattern in the interval *between* two acts of repetition. What becomes evident is the possibility of linking repetition and monument – little as they seem to have in common – in a combined and more abstract relationship.

4. The Model

I will return to that question in a moment. Prior to doing so, however, I want to introduce the basic model that underlies my ensuing reflections like a system of coordinates.

Monuments originate in an act of inscription. In the case of the pyramids, that act is the (rather complex) process of construction; in the case of a written text, it is the act of depositing undertaken by an author in combination with the widely ramified material and organizational processes of the publishing industry that turn authorial manuscripts into marketable print products. If a book is to persist, the initial act of depositing has to be complemented by additional instances and agencies such as distribution networks, libraries, the lack of natural catastrophes or air raids, and so forth. On this first level, therefore, act and monument are linked through a process of inscription.

Once a monument has been erected, it has an effect on a culture's daily practices. In the sim-

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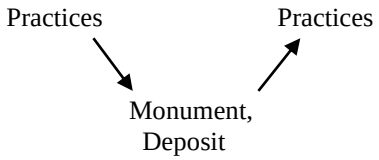
[11] A rather precarious identity, as Derrida demonstrated in his well-known debate with Searle. The debate advanced in three steps: (1) Derrida, Jacques: Signature, Event, Context. In: Glyph 1, 1977, pp. 172-197; (2) Searle, John R.: Reiterating the Differences: A Reply to Derrida. Ibid., pp. 198-208; (3) Derrida, Jacques: Limited Inc. abc. ... . In: Glyph 2, 1977, pp. 162-254. I discussed the debate and the 'certain self-identity' of the repetitive acts in *Docuverse* (FN: 3), p. 281.

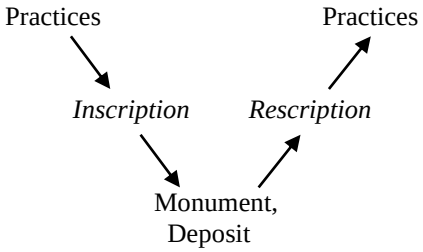
[12] This stability is valid only for hieroglyphs, not for cursive writing. For that reason, it is owing not only to repression, but always also to the material copresence of written documents from the past. (See: Assmann, Jan: Ancient Egypt and the Materiality of the Sign. In: Gumbrecht, Hans Ulrich; Pfeiffer, K. Ludwig (eds.): Materialities of Communication [1988]. Stanford: Stanford University Press 1994, pp. 15-31).

plest case, a book is read, a pyramid is marveled at; their deposit is 'dissolved' into daily practices by determining or shaping them. The monument unfolds its effects precisely because it does not remain in isolation, but, rather, writes itself back into daily practice.

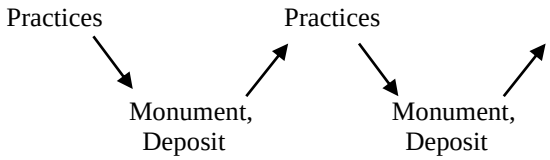
As a model, we can observe the intertwining of two movements:



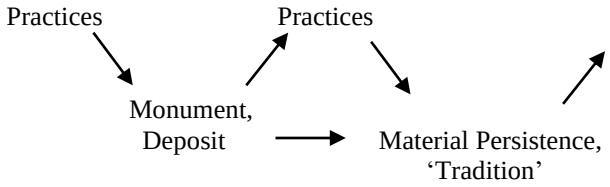
Or, more precisely:



Daily practices and monuments/deposits are linked in a cyclical movement. And since daily practices don't have any priority in this cycle, one could also formulate the above as follows:



As well, the model should illustrate the monument's material persistence – that is, the possibility that daily practices may return to the same monument:



This rather simple model, it seems to me, is considerably far reaching, which is why I expend quite some energy making it strong within the field of media theory. It is capable of interrelating in a systematic way questions arising in media theory, cultural theory, semiotics, the theory of technology, and psychoanalysis, as well as in several other important subdiscourses.[13] Further, as I have mentioned, the model opens up questions that would otherwise remain invisible.

Obviously, it provides a solution to the dispute that, as I described above, currently characterizes media theory. Whether I grant autonomous status to a given technology and examine its effects on social processes, or whether I insist that technology has its roots in social and communicative acts and practices, merely serves to indicate which phase of the cycle I am primarily interested in. In either case we are dealing with the one-sided treatment of a comprehensive process that, fundamentally, encompasses inscription and rescription – that is, the transition from practices to deposits, and the second transition from deposits to practices.[14]

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[13] In the following, I will only briefly touch upon some of these discourses, esp. semiotics and psychoanalysis. I will explore these connections in a more extensive fashion in a future essay.

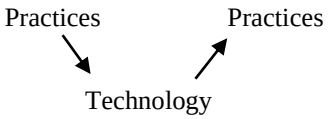
[14] I have developed this argument in detail in W., H.: Die prekäre Rolle der Technik: Technikzentrierte versus

5. At the Macro Level: Technology and Language

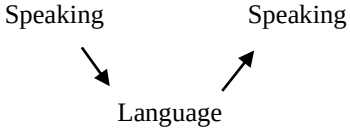
If we are now to project this model onto various configurations (with the possible consequence that it might appear less simple), we need to add a significant modification, for the model is by no means limited to a single text, as I have demonstrated it so far. Likewise, technology per se can be understood as a 'deposit' on a social level. At every point in history, single technologies merge into a landscape of technology: whatever we comprehend as the present state of technology is the result of past practices and, at the same time, the point of departure for future practices. At this level of abstraction, certainly, the cycle of inscription, depositing, and reinscription into practices is precisely the same as oh the micro level, which links an individual technology with the macro level of technology.[15] The same is certainly true of the world of texts, the social library, and so on.

In particular, however – and this point is anything but trivial that mechanism applies to *language.* The semantic system of a language, the system of conventionalized meanings that we experience as a stable lexicon, did not fall out of the blue, but (as can be glimpsed from numerous linguistic theories)[16] is the result of billions of speech acts and single texts that, in the manner of a collective work of art, have given form to the language. In concrete terms, this means that language too must be described in terms of a dialectic between linguistic practices and material deposits – deposits whose material location is dispersed among the heads of millions of language users.[17] Language can, thus, be framed in terms of a *technology* that, on the social level, intertwines acts of inscription/depositing with speech practices. This took place even prior to the development of writing, which illustrates the technological character of language all the more.

‚anthropologische' Mediengeschichtsschreibung. In Pias, Claus (ed.): Medien: Dreizehn Vorträge zur Medienkultur. Weimar: Verlag und Datenbank für Geisteswissenschaften, 1999, pp. 221-240; see https://homepages.uni-paderbom.de/winkler/Winkler--Die-prekäre-Rolle-der-Technik.pdf for the text.

[15] 

[16] It is baffling that the dialectic between speech and language is not a central concern of linguistic theory. Instead, and in abbreviation of Saussurean categories, synchrony and diachrony are juxtaposed in abstract and static fashion. Nevertheless, time and again one can find isolated approaches that are close to my arguments: "Speech always implies both an established system and an evolution; at every moment it is an existing institution and a product of the past"; "It [language] is a storehouse filled by the members of a given community through their active use of speaking, a grammatical system that has a potential existence in each brain" (de Saussure, Ferdinand: Course in General Linguistics [1916]. New York: McGraw-Hill, 1996, pp. 8, 13). Similarly, in research into orality: "[T]he meaning of each word is ratified in a succession of concrete situations [...] all of which combine to particularize both its specific denotation and its accepted connotative usage. This process of direct semantic ratification, of course, operates cumulatively" (Goody, Jack; Watt, Ian: The Consequences of Literacy. In: Goody, Jack (ed.): Literature in Traditional Societies. Cambridge: Cambridge University Press 1968, p. 29). In Foucault: "What civilizations and peoples leave us as the monuments of their thought is not so much their texts as their vocabularies [...] the discursivity of their language. The language of a people gives us its vocabulary, and its 'vocabulary is a sufficiently faithful and authoritative record of all the knowledge of that people'" (F., Michel: The Order of Things: An Archeology of the Human Sciences [1966]. New York: Vintage 1994, p. 87; Foucault is here quoting Diderot). And finally, in Marshall McLuhan's more general view of media and technology: "The classic curse of Midas, his power of translating all he touched into gold, is in some degree the character of any medium, including language [...]. All technology has the Midas touch [...]. Language, like currency, acts as a store of perception and as a transmitter of the perceptions and experience of one person or of one generation to another**"** (McLuhan, Marshall: Understanding Media: The Extensions of Man [1964]. New York: Signet, 1966, pp. 130-131).

[17] 

Almost imperceptibly, we have significantly enlarged the notion of *technology:* while much of media theory, in particular, narrowly focuses on hardware,[18] and on writing as a comparatively compact and materialized object of investigation, the model proposed here urges a more complex understanding of technology – an understanding that intertwines material depositing with practices and that comprehends practices themselves systemically from the point of view of their technicity. Paralleling some contemporary theories of technology,[19]18 we ought to return to the ancient notion of *techne,* which has always encompassed both of these elements.

6. Conventions and Schemata

These reflections about technique and language have to be extrapolated. If language functions as a social *technology* that intertwines linguistic practice and the language system, and that subordinates the apparatus of signification at any one time to the linguistic events of the past (acts of speech, utterances), we have found a model that describes, in rather precise fashion, not just linguistic events, but *conventions,* in a generalized sense. Conventions are *congealed practices:* Sedimentations, deposits, actually, of fluid acts and events that accrue and accumulate and eventually transmute into a structure.

Were one to inquire into the concrete discourse-economical mechanism that brings about conventions,[20] one would, quite likely, first point to repetition. Conventions are grounded in repetitions, and they trigger entire chains of future repetitions. Deposited as a system, however, they become an agglomerate, and hence monumental. Through the notion of convention, we open up an entire universe of theoretical problems that can now be linked to the model described here. First off, theories of *schemata,* which have become important in the analysis of visual media: all the approaches ranging from Gestalt psychology to the theory of stereotypes, and from iconography in fine arts to the notion of aesthetic form, center, fundamentally, on what semiotics would subsume under the notion of a *code.*

As difficult as it has proven to formulate a semiotic theory in relation to visual media, it is, simultaneously, undeniable that – in the field of technical images, in particular – repetition and scheme formation play a dominant role when it comes to media socialization and media competency, and to shaping the structure of expectations with which recipients approach concrete products. Schemata and stereotypes are deposits that profoundly affect the structure of visual discourse, even if the field of film studies has a rather critical perspective on such stereotypes and schemata. Stereotypes are a kind of hidden skeleton embedded in technical images and are – at least in terms of their structure and function – very similar to the conventionalized schemata residing in language.

Last but not least, the notion of convention makes it possible to relate systems of action, as these are examined by sociology and the social sciences, to the sketched-out model. The realm of silent practices as well is dominated by the same logic of singular act and scheme, repetition and conventionalization. By demonstrating the regularity of acts, sociology is con-

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[18] At one point, this was not unjustified, especially when it was a matter of countering philology‘s forgetfulness of technology.

[19] See, e.g., Mitcham, Carl: Thinking through Technology: The Path between Engineering and Philosophy. Chicago: University of Chicago Press 1994); Smith, Merritt Roe; Marx, Leo (eds.): Does Technology Drive History? The Dilemma of Technological Determinism. Cambridge: Cambridge University Press 1994; Rothenberg, David: Hand’s End: Technology and the Limits of Nature. Berkeley: University of California Press 1995.

[20] ‘Discourse economy’ refers more to a work scheme than to an already existing, fully elaborated scholarly approach: based on the model of classical political economy, which investigates the production of commodities as well as the circulation and accumulation of capital, discourse-economical research would have to clarify how also in the realm of signs and symbolic exchange quantitative processes generate structures.

cerned with the kind of deposit that I have been talking about. Above all, the model presented here operates as a switchboard, because it puts the general notion of convention at its center and because, at the same time, it precisely defines that notion as a deposit suspended in the dialectic between singular act, repetition, and depositing.

7. Limits?

At this juncture, it may be prudent to correct the impression of excessive overestimation and point out some specific limits of the model. I certainly do not believe that what I have presented here is a kind of universal key or the $e = mc^2$ of media scholarship; its theoretical problems are all too evident.

These problems suggest themselves already on the very level of the model's formulation. Is it really possible to combine the pyramids and the conventional system of language under the notion of a deposit? Are we talking about the same type of deposit, given that pyramids persist in a material-monumental way, while the semantic system of language with its discourses lumbers forward, subject to constant change? To insist on the notion of 'deposit' means – notwithstanding such clear distinctions – to point out the fact that in both cases we have to envision a material storage device side by side with interaction. A second, more serious question is, in what sense can we speak of a 'cycle' if this cycle combines chains of different acts, which is to say, it does not simply return to its point of origin?[21] And finally, isn't it an extremely conservative model that emphasizes historical continuities, without being able to reflect on the ruptures and radical changes that are at the center of postmodern debates? The list of theoretical problems could easily be expanded. Therefore, let us return to the sunny side of my model and its possible achievements.

8. Subjects as Depositing Sites

Let me draw attention to an important shift that the preceding arguments have produced, possibly without its being noticed. While I started by pointing to the material depositing in texts or technologies, the type of depositing encountered in language – and, even more, in conventions – is wholly different. In such cases, the material depositing site is not an environment of objects, but, on the contrary, the *subject.* More specifically, it is, on the one hand, the individual memory/body memory in which the linguistic system and the system of conventions are located; and on the other hand, it is a collective memory, which, through its distribution into individual memories, constitutes itself as a phenomenon of social redundancy.

This shift from objects to subjects as the site of inscription, irritating as it may be, is not simply deficient. While subjects as carriers of practices were, initially, systematically juxtaposed to all forms of 'material and object-like' deposits, they are now themselves understood as belonging to the side of objects assuming a passive role. Does that not – at least, from one perspective – correspond to current conditions? Poststructuralism, above all, has shown us that we are the objects of our media socialization, the objects of social inscription, and the

[21] The notion of repetition contains the entire problem: it combines the idea of linear progression (as it is presumed by the notion of an act) with the idea of a cyclical return. The two ideas, initially, contradict one another. Repetition, however, is inconceivable without this contradiction. Even more: it can easily be seen as the model or concept for this contradiction. Repetition, as I said earlier, contains a moment of identity or similarity; otherwise, it could not be recognized as such in the whirl of events. At the same time, it also contains a moment of difference in that it always combines self-contained/heterogeneous events. Instead of speaking of a cycle, therefore, one could speak of a *spiral* (if one is to remain in the problematic sphere of geometric illustration): a spiral moves forward in linear fashion along one of its axes (the moment of difference); at the same time, it also describes a cyclical motion (the moment of identity). Naturally – which complicates the situation even more – the interplay of both moments can proceed in different constellations.

unconscious-involuntary carriers of linguistic and extralinguistic conventions that we execute without our prior approval, and that we transmit without being able to control them.

In view of the central question of my essay, which focuses on those cultural practices that secure a continuation of discourses, I would argue that subjects can indeed be found in both positions: in the subject position, as a carrier of acts that result in deposits – deposits that, in turn, become the origin for renewed practices; and functionally parallel to such deposits – as carriers of conventional, congealed structures that counterbalance fluid discourses as an instance of resistance, inertia, and restraint. That this is an extremely dramatic dimension of cultural continuation becomes apparent when we consider that, following the collapse of the Third Reich in 1945, it was a great deal easier to 'purify' the holdings of German libraries than to cleanse what goes on inside German heads. Humans themselves, in that sense, are 'monumental,' and as astonishingly adaptable as they are, they also resist, with leaden heaviness, projects of change even when they are emancipatory.

9. Condensation

Naturally, we will also have to distinguish between the depositing into material storage devices and that into human memories. Ideally, material storage devices are supposed to preserve their contents faithfully. Human memories, on the other hand, tend to select, reconfigure, and forget their contents – and we know from memory theory that this is the real achievement of human memory. A sober and quantitative reflection indicates that we *have* to forget the large majority of the infinite perceptions we make on any given day, simply because of the limited human processing capacity and because an unstructured accumulation of perceptions is impossible. Forgetting, in that sense, is not a defect, but an absolutely necessary form of protection.

What is more, we can assume that this forgetting leaves its traces. Even though memory theory offers surprisingly few models on that score, Freud's notion of the 'miracle block' already takes note of the fact that the concrete act of perception – while being submerged in the act of forgetting – changes the perceiving subject with each perception. Forgetting appears to be a machine that transforms the infinite space of singular perceptions into subject structures; or, to put it more precisely: it transforms these perceptions into those structures of expectation with which the subject encounters new perceptions. Forgetting, therefore, is always a 'forgetting into the structure' of subjects,[22] and such forgetting can easily be related to Freud's notion of 'condensation,' as formulated in *The Interpretation of Dreams.*[23]

10. Collective Condensation, Medial Condensation

There appear to be wholly comparable mechanisms on the collective level. If the system of language originates in the speech acts of the past, which have given form to the semantic system through a gigantic process of accumulation, language in its entirety must be seen as a

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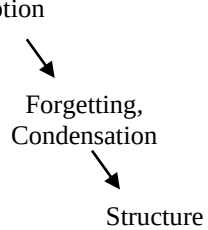
[22] See: Winkler, Docuverse (FN., n. 3), p. 143.

[23]


product of 'condensation.'[24] What is of relevance here is the quantitative proportion: billions of speech acts register as deposits in linguistic structures, whose virtue is that they are so compact as to fit into puny human skulls. Given our limited mental resources, this is an astonishingly compact and economical form of representation, and a brilliant compromise.

Perhaps this is the most admirable aspect of language: as a social technology it transforms speech acts into compressed semantic mental structures. And this conversion, the mechanism for the production of structures, is at the center of what I elaborated above as a generalized model. The necessary dialectic between act and deposit, discourse and structure, is centered in the notion of condensation.

Naturally, this mechanism does not apply solely to language. It is evident that the stereotypes and theories of schemata in the visual media, to which I referred above, follow similar mechanisms: stereotypes and schemata assume their structure – even more visible than the units of language – in the progression of discourses; a lang chain of Western movies has given shape to the genre, and the structure of expectation with which recipients encounter it. Prior experience condenses into media competency, which, in turn, shapes a system of socio-symbolic topoi shared by both producers and receivers. It is time to retire the notion that visual media can be accessed without prerequisites.

Technology and architecture can be seen as products of condensation as well – this time, outside human heads. The practices and knowledge of the past have accrued into the respective 'state of the art.' Paralleling language, technology is a compressed structure containing the practices of the past and anticipating practices of the future. The same quantitative proportion applies here as well: trivializing Hegel, one could say that the practices of the past – that is, the technological practices of the past – have been *'sublated in,'* or displaced from, the collective *Kunstwerk* of technology.

This is relevant even on the level of the single product: As a socio-symbolic technology, the feature film – leaving all other medial differences aside – conceivably has surpassed literary fiction only because it shows a higher level of condensation. Deposited onto one material carrier, which can easily be consumed in ninety minutes, is the work on which entire divisions of industrial specialists have been working for years, and they have done so with the help of an advanced technology in which is condensed, in a unique way, societal work and technological know-how. The novelist's solitary act of writing, by contrast (supported solely by the collective *Kunstwerk* language), appears to be 'technologically underequipped.'[25]

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[24] The most striking version of this thought was formulated by Christian Metz, whose book offers a psychoanalytic-semiotic theory of the cinema: "It is indeed a characteristic of language – and another aspect of the 'problem of the word' – that it has this constant but never fully realized tendency to encapsulate a kind of complete (but concentrated, compressed) 'argument' in every ward: a tendency which is also intrinsically condensatory. Even the most ordinary ward, *lamp* for instance, is the meeting-point for several 'ideas' [...] each of which, if it were unravelled, or decondensed, would require a whole sentence"; "Past condensations meet in each ward of the language [...]. [T]his is to define the lexicon itself as the product of an enormous condensation" (Metz, Christian: The Imaginary Signifier [1973-76]. Bloomington: Indiana University Press 1982, pp. 225, 239).

[25] The comparison and thesis are, admittedly, rather crude, but I do not consider them to be out of place. Whoever judges media-historical transitions to be in need of interpretation will have to clarify why feature films obviously achieve a higher level of signification. Popular explanations along the line of "movies are more successful because they are entertaining and easy to consume" are insufficient. What I have provisionally called "level of signification" would also have to be elaborated within the framework of an economy of discourse.

11. Recapitulation: Monuments and Repetition

Revisiting the question of the relationship between monuments and repetitions, one connection should be sufficiently clear: Monuments can replace repetition because they themselves are social engines aimed at initiating repetition. Discourses manage to secure their continuity by establishing agencies of inertia that persist side by side and in tension with them.

At the same time, we do well to distinguish between the various types of agencies. Type 1 would be the pyramids, which combine persistence with – in an ideal case – unchanging duration thanks to their material durability. Type 2 can be represented by the human memory and the system of language: both are products of condensation, and both exist and unfold within discourse; at the same time, their inertia and relative immobility provide a counterbalance to the tendency of discourse toward abrupt changes. All actual utterances and events must be seen with a view toward this agency of inertia.[26]

Paradoxically, therefore, type 2 embodies the historical-plastic monument that is mutable in itself. In that context, technology has a dual face: on the level of the single technological artifact, it no doubt belongs to the first type of simple material inertia; in the social realm, operating as a social technology and analogous to language, it belongs to the second type. Both types are characterized by a model of condensation; and the point of each individual artifact seems to be that it freezes a certain level of condensation in a material stasis. Both types as well force practices into cycles of repetition. That was the reason for abandoning the original notion, argued by Jan Assmann, to see monuments and repetition in terms of a polarity.

12. Summary

What insights have we gained with this speculation? First, and fundamentally, medial acts have to be referred to medial deposits, and medial deposits, in turn, have to be referred to medial acts. Only this dialectic will allow us to show how media bring about cultural continuity. As I have pointed out, repetitions are no exception and have to be seen in the context of the interplay between a pattern and its reenactment, a moment of action and a moment of persistence. Deposited in material fashion, and hence 'monumental,' the pattern awaits its reactivation and renewal.

Second, human subjects are not located exclusively on the side of actions. Given that human memory has to be conceptualized as a site of inscription and, in a more general sense, subjects as the carriers of an unconscious socio-semantic structure, the subjects themselves, despite their undeniable mobility, represent a source of cultural persistence.

Third, next to the relatively stable, material monumentality of individual artifacts, we have to posit a second type that achieves monumentality by way of accumulation and condensation. Towns, technologies, and languages may serve as examples of what, because of their constant

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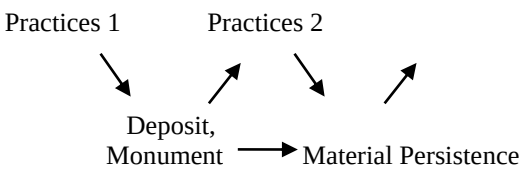
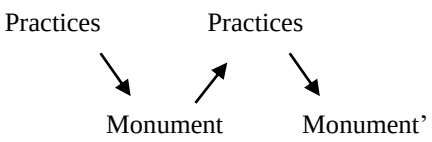
[26] Type 1:



Type 2:



morphing, can only be described in terms of condensation. Subsequently, the notion of convention can be apprehended only by way of conventionalization, which, in turn, has to be seen in the context of chains of repetitive acts.

The notion of condensation is the core of the model and its real theoretical gain. What characterizes condensation is that it combines a quantitative with a qualitative aspect. When the incalculable range of linguistic utterances turns into a linguistic structure, acts are transformed into structures in ways that might recall Friedrich Engels's dialectics of quantity and quality.[27] This enables us to connect our insights to quantitative-economic models. The mechanisms of circulation and distribution, which come quite naturally to economic analyses, are still hardly investigated in media theory. Split into empirical and theoretical analyses, quantities are left to superficial statistics, while theoretical models concentrating on the circulation of signs are quite rare, and an 'economy of discourse' is, at best, a desideratum.

Referring to the concept of 'condensation,' technological reproduction, to use one of the most prominent concepts of media theory as an example, would be conceived of as a certain type of repetition. Technological reproduction generates structure (and redundancy) and – this is its monumental aspect – achieves cultural continuation. It would be the task of an 'economy of discourse' to facilitate more precise synchronic and diachronic descriptions of such mechanisms.

Finally, the model presented here may help to correct certain systematic distortions of contemporary theorizing. It seems obvious that current media theorists suffer from a flagrant 'forgetfulness of language' and almost completely evade issues of *language and code.* My explanation is that semiotics, formerly a hopeful candidate in the theory debates, has fallen into the abyss that separates anthropological from technology-centered approaches. With their grounding in action theory, the former focus on individual acts, but in doing so they forget that acts cannot be conceptualized independently of repetitions – that is, independently of a system of habits and conventions. This makes it necessary to reflect upon the tension between acts and 'monumental' code.

Theories centered on technology, in turn, view code as a media-theoretical residue from the humanist-anthropological era because it is still tied to human carriers. The category of 'meaning' is judged to be bloated and fuzzy, opposed to any materialist description of discursive processes, and hence negligible; especially since the actual history of media itself appears to have moved from 'natural languages' to hardware-intensive visual media and, most recently, to the 'pure' sphere of mathematical algorithms.

In light of what has been proposed here, however, this view is an illusion. lf a code is obviously still at work in the case of visual media (and a crux of visual media is precisely that they systematically obscure this fact);[28] and if, second, technology itself has to be conceptualized as a code – that is, as a condensed social deposit that is capable of determining subsequent practices – then it appears that the same question has to be asked about the computer. lf we are to take this model seriously, we will have to pinpoint the exact instance in the computer where code emerges. I have attempted something along these lines by suggesting that one should approach the project of formal languages and formalization from this point of view.[29]

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[27] See Friedrich Engels, Dialectics of Nature, in Karl Marx and Friedrich Engels, Collected Works (London: Lawrence and Wishart, 1975-), vol. 25, pp. 356-361.

[28] In the context of the debates on realism, the problem of the 'invisible code' is discussed under the heading of the 'illusion of transparency.'

[29] See Winkler, Hartmut: Über Rekursion: Eine Überlegung zu Programmierbarkeit, Wiederholung, Verdichtung und Schema. In: c't, Magazin für Computertechnik, Nr. 9/99, S. 234-240, https://homepages.uni-paderbom.de/winkler/Winkler--Rekursion.pdf.

Rather than declaring code to be obsolete, it may be necessary to describe the production of meaning itself as a social technology that is, in materialist and discourse-economical categories. I have very roughly suggested as much by pointing to the transformation of discourse into structure; in such a way it may be possible to avoid both the allergy to ‘meaning’ and the truncation of the concept of technology by way of eliminating language.

Media theory seems to depend on the elaboration of models that go beyond what is evident in media. These models are necessarily abstract, simply because only abstract models are able to cross the established, sizable boundaries between different media that inevitably resist media-theoretical comparisons. As abstract models they are of necessity wrang: they are bound to miss precisely those mechanisms that are particularly characteristic of individual media and that have to be part and parcel of any single-medium analysis. But focusing on individual media (as well as on so-called intermediality) cannot spare us the Iabor of theoretical effort.

Developing a general notion of convention and conventionalization, an idea of cultural continuation, an idea of how monuments and repetitions work together, and grasping what material persistence has in common with other types of continuation – all this appears to be necessary for any comparison between media. Once we assume that the various levels of acts, institutions, the symbolic, and the technological – which are without doubt the four basic registers for any elaboration of media – do not simply exist on their own, we have to ask on what level they are mediated. This is precisely the question to which the model of the dialectical change of discourse into structure presented here wants to provide a first, tentative answer.

3 Condensation

Forgetting into the Structure [1]

Discourses use human memories
to produce such precarious things as the system of language

[…]

3. Forgetting and Condensation

> "It is possible to live almost without memory, indeed, to live happily, as the animals show us; but without forgetting, it is utterly impossible to live at all."[2] And: "One forgets not by cancellation but by superimposition, not by producing absence but by multiplying presences."[3]

Between these two statements emerges the space that will now be explored. We must first realize that in most theories, forgetting is seen as a kind of accident, as a slipping away or fading, in short: as a loss.[4] The normal case of preservation is contrasted with forgetting as a nuisance, a weakness that must be avoided and that can be kept within tolerable limits through discipline or training; learning is thought of as an enrichment, forgetting correspondingly as a loss of mental economy.

And both Nietzsche and Eco definitively rule out an ars oblivionalis.[5] Nietzsche, however, and this is the decisive break, fundamentally re-evaluated forgetting. In his frontline position against

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[1] Main chapter of my book: Winkler, Hartmut: Docuverse – Zur Medientheorie der Computer. München: Boer 1997, chapter 4: Verdichtung [Condensation], excerpt: pp. 143-172; the fourth section was shortened and revised for the translation. The German text is available online:
https://homepages.uni-paderborn.de/winkler/Winkler--Docuverse.pdf.

[2] Nietzsche, Friedrich: On the Utility and Liability of History for Life [1874]. In: The Complete Works of Friedrich Nietzsche, vol. 2, Unfashionable Observations. Stanford (Cal.): Stanford UP 2001, p. 89.

[3] Eco, Umberto: An Ars Oblivionalis? Forget it! In: Publications of the Modern Language Association of America, vol. 103, no. 3, May 1988, pp. 254-261, here: p. 260.

[4] "Some men in the presence of considerable stimulus have no memory owing to disease or age, just as if a stimulus or a seal were impressed on flowing water. With them the design makes no impression because they are worn down like old walls in buildings, or because of the hardness of that which is to receive the impression. For this reason the very young and the old have poor memories; they are in a state of flux, the young because of their growth, the old because of their decay. For a similar reason neither the very quick nor the very slow appear to have good memories; the former are moister than they should be, and the latter harder; with the former the picture has no permanence, with the latter it makes no impression." (Aristotle: De memoria et reminiscentia. Quoted from Yates, Frances A.: The Art of Memory [1966]. In: Selected Works, vol. III, London/NY: Routledge 1999, p. 33).

[5] "But he [the man] also wondered about himself and how he was unable to learn to forget and always clung to what was past; no matter how far or how fast he runs, that chain runs with him." (Nietzsche, On the Utility…, op. cit., p. 87 (add. H.W.)); Eco on a questionable semiotic basis... (Eco, An Ars…, op. cit., pp. 255ff.).

historicism, he emphasized that the past, indiscriminately piled up, threatens to suffocate the present; a targeted aggression is therefore necessary in order to master the overpowering past, and forgetting appears as a dispensation that opens up the necessary space for action in the first place.

In the search for theories that expand on this idea, we once again come across psychoanalysis, namely the Freudian model of the 'Mystic Writing-Pad.'[6] And at the same time we have to realize: Although the Mystic Writing-Pad is one of Freud's most prominent ideas, has been quoted endlessly, and, as Assmann shows, constitutes the second major field of metaphor within memory theories alongside the 'storehouse metaphor,'[7] neither memory theory nor media theory have actually been able to integrate it into their models; and in particular a semiotic interpretation of the 'Mystic Writing-Pad' is still pending.[8]

Freud begins with a question directly related to media theory:

> "All the forms of auxiliary apparatus which we have invented for the improvement or intensification of our sensory functions are built on the same model as the sense organs themselves or portions of them: for instance, spectacles, photographic cameras, ear-trumpets. Measured by this standard, devices to aid our memory seem particularly imperfect, since our mental apparatus accomplishes precisely what they cannot: it has an unlimited receptive capacity for new perceptions and nevertheless lays down permanent – even though not unalterable – memory-traces of them. As long ago as in 1900 I gave expression in 'The Interpretation of Dreams' to a suspicion that this unusual capacity was to be divided between two different systems (or organs of the mental apparatus). According to this view, we possess a system Pcpt.-Cs., which receives perceptions but retains no permanent trace of them, so that it can react like a clean sheet to every new

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[6] Freud, Sigmund: A Note upon the 'Mystic Writing-Pad' [1925]. In: F., S.: General Psychological Theory. Papers on Metapsychology. NY: McMillan 1963, pp. 207-212.

[7] "In a concise, groundbreaking essay on the subject, Harald Weinrich has established that in the field of memoria metaphorics there is not, as one might assume, a colorful, unmanageable abundance of images. In his opinion, there are only two central metaphors: the wax tablet and the magazine. They have their specific origins and belong to certain traditions. The magazine metaphor comes from the context of sophistry and rhetoric, the pragmatic development of language skills and memory capacity within the framework of a learnable technique of persuasive speech. The wax tablet metaphor elaborated by Plato, on the other hand, refers not to an artificial but to natural memory. This appears as a mysterious divine gift and is located in the innermost part of the human soul. Weinrich summarizes his thesis with the following words: 'The duality of the memoria image fields is a fact of occidental intellectual history. It is probably connected with the duality of the phenomenon of memoria; the magazine metaphors are mainly gathered around the pole of memory, whereas the tablet metaphors are gathered around the pole of remembrance.'" (Assmann, Aleida: Zur Metaphorik der Erinnerung. In: A., A.; Harth, Dietrich (ed.): Mnemosyne. Formen und Funktionen der kulturellen Erinnerung. Frankfurt a. M.: Fischer 1991, p. 13 (transl. H. W.)).
"A particularly interesting metaphor for memory is the palimpsest. It is the book without a fixed form, the dynamized book. Thomas De Quincey has precisely described the technical process by which the expensive parchment successively becomes the carrier of various inscriptions: What in antiquity bore the manuscript of a Greek tragedy could be cleared by careful preparation and in late antiquity accommodate an allegorical legend, in the Middle Ages a chivalric epic. Contemporary chemistry and philology in combination were able to follow the path of oblivion in the opposite direction. [...] De Quincey sees this as an image for the retrograde explosive power of memory [...]. Freud's description of the Mystic Writing-Pad as a model of memory comes very close to De Quincey's model of the palimpsest. [...] The writing metaphor is much more complicated than the storehouse metaphor. The topological order of the magazine suggests organization, economy, availability – all aspects in which artificial memory has an advantage over natural memory. The imagery of writing and overwriting, of retaining and deleting [...] leads away from the artificial and back to the constitution of natural memory. In the artificial memory of mnemonics, storage and retrieval are symmetrical [...]. In natural memory they fall apart. [...] Between writing and reading occur distortions, shifts, obscurations, and, last but not least, forgetting." (Ibid., pp. 19-22 (transl. H. W.)).

[8] Lacan and Derrida, of course, will have to be discussed.

> perception; while the permanent traces of the excitations which have been received are preserved in 'mnemic systems' lying behind the perceptual system."[9]

Freud is thus laboring over a riddle; while the technical writing systems basically have only one capacity and are either capable of unlimited recording (slate) or of storing permanent traces (paper), the psychic apparatus seems to be able to do both; and the division into two organs of the psychic apparatus, Pcpt.-Cs. and memory system, cannot satisfy as long as it cannot be clarified how the two interact.

In the Mystic Writing-Pad, he now finds the first technical medium that also combines both functions. The familiar construction of wax plate and cover sheet, today usually connected by a sliding mechanism, only appears to completely erase the current entries because, as Freud observed, permanent traces remain in the wax.

> "We need not be disturbed by the fact that in the Mystic Pad no use is made of the permanent traces of the notes that have been received; it is enough that they are present. There must come a point at which the analogy between an auxiliary apparatus of this kind and the organ which is its prototype will cease to apply. It is true, too, that, once the writing has been erased, the Mystic Pad cannot 'reproduce' it from within; it would be a mystic pad indeed if, like our memory, it could accomplish that. None the less, I do not think it is too far-fetched to compare the celluloid and waxed paper cover with the system Pcpt.-Cs. and its protective shield, the wax slab with the unconscious behind them, and the appearance and disappearance of the writing with the flickering-up and passing-away of consciousness in the process of perception. […] It is as though the unconscious stretches out feelers, through the medium of the system Pcpt.-Cs., towards the external world and hastily withdraws them as soon as they have sampled the excitations coming from it. […] If we imagine one hand writing upon the surface of the Mystic Writing-Pad while another periodically raising its covering sheet from the wax slab, we shall have a concrete representation of the way in which I tried to picture the functioning of the perceptual apparatus of our mind."[10]

Freud is aware that the technical metaphor has clear limits. The permanent traces have no function within the system and, as the text itself notes, they can no longer reach the surface on their own. In this respect, the image describes the path from perception to memory, but not the path that runs in the opposite direction; this path seems blocked, and a recovery of memory content in the process of remembering seems to fall out of the model.

If this is not simply a defect in the model, we will have to ask what thesis or intuition lies behind the chosen arrangement. And now three determinations become important. Firstly, it is striking that Freud does not describe memory as a lucid coexistence of memory traces, but rather identifies it with the unconscious. The permanent traces are withdrawn from consciousness, and it is therefore only logical that the technical metaphor blocks recovery too.

Secondly, this corresponds with the fact that the permanent traces in the wax layer overlap and are therefore no longer decipherable as such; this, too, no longer seems to be a defect of the image, but rather a direct part of it. And thirdly and finally, the motif of superimposition points beyond the text itself: Superimposition, addition, or accumulation would be techniques that could moderate between the overwhelming multiplicity of perceptions and the necessarily limited capacity of memory; thus, the transition to an economic conception becomes possible, even if, as already said, this is not formulated in the text itself.

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[9] Freud, A Note upon the 'Mystic Writing-Pad,' op. cit., p. 208.

[10] Ibid., pp. 211f.

The three determinations mentioned are particularly interesting when the question is not about memory but about forgetting. While psychoanalysis normally links forgetting and the unconscious to the process of *repression* and is interested in the reasons that have caused repression in individual cases and collectively, a completely different understanding of the unconscious is indicated here: the unconscious appears as a precipitation[11] that perception always and inevitably leaves behind, and that remains – almost independently of repression – as the immobilized equivalent of life's events:

> "On the Mystic Pad the writing vanishes every time the close contact is broken between the paper which receives the stimulus and the wax slab which preserves the impression. This agrees with a notion which I have long had about the method in which the perceptual apparatus of our mind functions, but which I have hitherto kept to myself. My theory was that cathectic innervations are sent out and withdrawn in rapid periodic impulses from within into the completely pervious system Pcpt.-Cs. So long as that system is cathected in this manner, it receives perceptions (which are accompanied by consciousness) and passes the excitation on to the unconscious mnemic systems; but as soon as the cathexis is withdrawn, consciousness is extinguished and the functioning of the system comes to a standstill."[12]

To repeat: this is a very different conception of forgetting than the common understanding of psychoanalysis normally assigns to it. It is not individual events that are forgotten (and others are preserved in a memorable or potentially memorable way), but basically all perceptions are 'forgotten' into the unconscious. And this unconscious, one can add with the image of the wax tablet, receives its imprint in this process.

Forgetting into the structure is thus the formula that, derived from the text of the Mystic Writing-Pad, I would like to propose for the following considerations. It forms a bridge both to Lacan's language-theoretical considerations and back to the data universe and the thesis that it could be a 'mnemopathic' general arrangement;[13] if forgetting does not mean losing, the initial question is already posed differently, and the possibility emerges of describing forgetting as a discursive process; a concept that can possibly be introduced into a media theory or semiotics.

On this path, a second category by Freud must first be considered, a second pillar on which a 'theory of forgetting' can be based. What is more than astonishing about the Mystic Writing-Pad text is that although Freud makes a link to the interpretation of dreams, and the Mystic Writing-Pad almost forces an association with superimposition/addition/accumulation, the concept of *condensation*, which is central to the Interpretation of Dreams, is not used.

The concept itself is so well known that a presentation is largely superfluous. Nevertheless, it seems useful to reiterate some of Freud's definitions, especially since a rather self-serving use of the model will be made in the following.

In condensation, Freud discovered one of the decisive mechanisms of dream work.

> "The first thing which becomes clear to the investigator in the comparison of the dream content with the dream thoughts is that a tremendous work of condensation has taken place. The dream is reserved, paltry, and laconic when compared with the range and copiousness of the dream thoughts. The dream when written down fills half a page; the

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[11] (Note on translation:) the German term 'Niederschlag' [precipitation, sedimentation] is a metaphor taken from chemical processes…

[12] Ibid., pp. 211f.

[13] (Note on translation:) The book makes a contribution to the media theory of computers; and the first two sections of the chapter describe the Internet and its ideal of indiscriminate storage as a 'mnemopathic' fantasy...

> analysis, in which the dream thoughts are contained, requires six, eight, twelve times as much space."[14]

The scope of the term is initially limited to the dream. But what does the concept of condensation mean precisely? Freud observes that the elements that appear in dreams often have to be assigned not a single but several meanings; several dream thoughts have thus entered into the same element of the dream and have found their common expression there. Accordingly, 'condensation' initially means the process that draws together a multitude of dream thoughts into a single dream element.

Condensation thus means psychic effort (it is not for nothing that Freud speaks of dream 'work'), necessary for distorting the dream thoughts to such an extent that they can pass the censorship and appear on the surface of the dream;[15] its main result, however, is a tremendously economical form of representation.[16]

If the level of the represented (the hidden dream thoughts) and the level of the representation (the manifest dream content) diverge, the question arises as to how the two are structurally connected. And Freud finds the answer once again in the field of association psychology. As in the 'Psychopathology of Everyday Life,' he investigates the thought connections that have motivated the dream elements in individual concrete cases and reconstructs them as a *network* that supports the individual elements.

It turns out that each element of the dream is connected by manifold associations with other elements of the dream, with remnants from the day's life, linguistic associations, with wishes and hidden preferences; and it often turns out that dream elements form "a common mean," a kind of a compromise between two dream thoughts,

> "taken over unchanged from an indifferent impression and bound up with the psychologically significant experience by means of the most abundant associations. Not only the combined idea […] however, but also each of the separate elements […] penetrates deeper and deeper into the confused tangle of the dream thoughts."[17]
> "[The individual element] is a veritable nucleus, the centre for the dream of many trains of thought […]. Here we find ourselves in a thought factory, in which, as in the 'Weaver's Masterpiece': 'One tread moves thousands of threads,/ The little shuttles fly back and forth,/ The threads flow on unseen,/ One stroke ties thousands of knots.' […] [The impression emerges] that the elements […] have been accepted in the dream content because they were able to show the most extensive connections with the dream thoughts, and thus represent nuclei in which a great number of dream thoughts come together, and because they have manifold significance for the dream interpretation. The fact upon which this explanation is based may be expressed in another form: Every element of the dream content turns out to be over-determined […]."[18]

The recourse to the psychology of association and the image of the network fundamentally changes the concept of condensation. The economic idea of a quantitative accumulation becomes a structural one. And if each 'node' receives its weight and meaning through the number of links it attracts, this is so directly reminiscent of the structuralist image of *language* that a

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[14] Freud, Sigmund: The Interpretation of Dreams [1900]. NY: McMillan 1913, p. 261.

[15] Ibid., pp. 283ff.

[16] Emphasized above all in Derrida, Jacques: Writing and Difference [1967]. Chicago: The University of Chicago Press 1978, pp. 200, 210ff.

[17] Freud, The Interpretation of Dreams, op. cit. p. 264f.; see also p. 276.

[18] Ibid., pp. 265f. (add. H.W.).

transition to linguistic theory seems almost compelling at this point. Freud himself offers the connection when he writes:

> "The condensing activity of the dream becomes most tangible when it has selected words and names as its object. In general words are often treated as things by the dream, and thus undergo the same combinations, displacements, and substitutions, and therefore also condensations, as ideas of things. The results of such dreams are comical and bizarre word formations."[19] And, even more clearly: "A word being a point of junction for a number of conceptions, it possesses, so to speak, a predestined ambiguity, and neuroses […] take advantage of the conveniences which words offer for the purposes of condensation and disguise quite as readily as the dream."[20]

Nevertheless, the association with language should be put on hold in favor of a further definition that Freud takes from another medium, namely photography. He observes that dreams often superimpose faces and people and draw together the characteristics of different people into one; and this reminds him of Galton's photographic experiments.

> "I have adopted the method employed by Galton in producing family portraits, by which he projects both pictures upon one another, whereupon the common features stand out in stronger relief, while those which do not coincide neutralize one another and become obscure in the picture."[21]

And he concludes: "The construction of collective and composite persons is one of the chief resources of the activity of dream condensation."[22] The association with Galton brings two new features to the concept of condensation. On the one hand, it is a purely mechanical process; a photographic plate is exposed to different but 'similar' motifs, which are superimposed and form a new, common content when added together. "Finally," writes Lorenz, "Galton presents the definitive record: the mixture of 100 faces condensed into one."[23] The place of accumulation is the photographic plate. This mechanical memory is parallelized with the dream mechanism of condensation; a very simple mechanical process is held up as a mirror to the hitherto irreducibly psychic process of condensation, with the result that the distance between the two is diminished and the condensation itself moves into the vicinity of technical/mechanical processes.[24]

The decisive innovation, however, is a different one. When Freud says that in the superimposition similarities emerge, while the differences are erased and disappear, this means that the material undergoes a fundamental transformation in condensation. What appears to be a relatively unspectacular effect on the photographic plate essentially means that although concretes enter into the process of condensation, the result of condensation is not something concrete as

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[19] Ibid., p. 277.

[20] Ibid., p. 315.

[21] Ibid., pp. 274f.; see also pp. 297ff.

[22] Ibid.

[23] Lorenz, Thorsten: Der kinematographische Un-Fall der Seelenkunde. In: Kittler, F. A.; et. al. (eds.): Diskursanalysen 1. Medien. Opladen 1987, p. 111 (transl. H. W.); "[Marey's] technique likewise consists of multiple exposures on a fixed plate." (Ibid., p. 119 (transl. H. W.)).

[24] Lorenz's argument comes down to reducing the Freudian concept to its technical/media counterpart (…"the photo-technician Freud simply read his Galton closely"…, ibid., p. 115 (transl. H. W.)); as with Kittler, technology is seen as antecedent and the historical parallel development of psychoanalysis and media technology is definitively brought together on the terrain of the latter. Even if one does not share this project, it may be worth pursuing the functional parallels, and all the more so as Freud himself repeatedly used technical metaphors. "A symbolic order is represented technically in order to gain a model for its functioning." (Lorenz, op. cit., p. 113 (transl. H. W.)).

well, but an abstracted representation that favors similarities and has bid farewell to differences. Freud's assertion, then, is that a mechanical accumulation (repetition) gives rise to an effect of generalization or idealization. And this is indeed a crucial point. The possibility now arises of thinking processes of abstraction according to this pattern more generally; and when Galton himself wrote: "The ideal faces obtained by the method of mixed photography seem to have much in common with the so-called abstract [...] ideas,"[25] another new and unexpectedly direct reference to the theory of language opens up here.

And finally, Freud has a model in which the idea of an associative network and the aspect of quantitative accumulation come together. This is the concept of facilitation ['Bahnung'[26]], which Freud conceived as early as 1895 in 'Project for a Scientific Psychology.'[27] Still strongly oriented towards the scientific ideal of objectivity, Freud wrote:

> "According to psych[ological] knowledge, the memory of an experience (that is, its continuing operative power) depends on a factor which is called the magnitude of the impression and on the frequency with which the same impression is repeated. Translated into theory: Facilitation depends on the [magnitude of the impression] Qή which passes through the neurone in the excitatory process and on the number of repetitions of the process."[28]

Derrida has shown that the concept of facilitation brings a new connotation of violence to the concept of the associative network.[29] Facilitation and path-breaking presuppose a resistance to be overcome, and there is a connection both to the 'protective shield' ['Reizschutz'] in 'Beyond the Pleasure Principle,'[30] and to Nietzsche, who famously traced memory back to pain and painful engraving.[31]

A short-sighted reference to neurological facts, as is often attempted, is certainly inadmissible at this point as well.[32] However, the idea that existing pathways are reinforced by use is an idea that can also be incorporated into very abstract models; and it is relevant above all because it assumes an interrelationship between use and system, even more clearly than Galton's composite photography. If Galton already layered individual events to form an overall result, repetition now emerges as a form-building force. The network of associations appears as the result of

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[25] Lorenz quotes Galton (Lorenz, op. cit., p. 113).

[26] (Note on translation:) The German term 'Bahnung' contains 'Bahn,' which means lane or path; and the English version of Derrida's 'L'écriture et la différance' translates Freud's ‚Bahnung' accordingly as "breaching (lit. path-breaking)" (Derrida, Writing and difference, op. cit., p. 200).

[27] Freud, Sigmund: Project for a Scientific Psychology [1895]. In: The standard edition of the complete psychological works of Sigmund Freud, vol. 1, London: Hogart 1991, pp. 283-398.

[28] Ibid. p. 300 (add. H. W.).

[29] Derrida, Writing and Difference, op. cit., pp. 200f., 214ff.

[30] Freud, Sigmund: Beyond the Pleasure Principle [1920]. In: The Standard Edition of the Complete Psychological Works of Sigmund Freud, vol. 18, London: Hogarth 1955, pp. 7-64.

[31] See also: Nietzsche, Friedrich: The Genealogy of Morals [1887]. In: The Complete Works, vol. 13, Edinburgh /London: Foulis 1913, pp. 65f.

[32] "The filter characteristics of the axion would vary with its diameter which in turn might be a function of the recency of signals passing down that axion […]." (Dreyfus, Hubert L.: What Computer Can't Do. A Critique of Artificial Reason. NY: Harper & Row 1972, p. 74; such arguments are particularly critical when direct conclusions drawn from the brain are applied to the computer (see, for example: Minsky, Marvin: The Society of Mind [1985]. NY: Simon & Schuster 1988, pp. 213, 314).

processes of facilitations, and ‘condensation’ as a process in which a quantitative process becomes structurally relevant.[33]

Now we need to add up. The considerations on condensation and the Mystic Writing-Pad, erasure, accumulation, superimposition, and generalization can be drawn together to form a theory of memory activity which, it should no longer come as a surprise, focuses on forgetting.

Condensation would not be a mechanism of dream work alone, but the entire interaction between perception and memory could be described according to the pattern of condensation. The two systems of the Mystic Writing-Pad seem to be connected by a mechanism that reworks the abundance of current perceptions into a new, concise, and economical form of mental representation. Accordingly, ‘memory’ is the place where current perceptions are transformed into structure. Not selection[34] but compression seems to determine the process, and compression itself does not seem to be an irreducibly qualitative process; and finally, forgetting is not a losing but a becoming unrecognizable in compression.

‘Forgetting into the structure’ was the formula I proposed above; it may have gained, if not evidence, at least some probability. It has the advantage that it enables a connection to the consideration about collective memory and to the related question as to how process turns into structure (and structure into process) in the course of tradition building.[35] It enables a connection to the problem of how speech (as a practice) and language (as a system) relate to each other; and, by opening up a transition to semiotic, linguistic, and media theoretical considerations, it suggests a de-psychologization of the model.[36]

The next section accordingly aims to clarify whether a systematic connection between condensation and language can be determined. One point, however, should be made first; if it was said above that Freud regards condensation as, among other things, a process of generalization, then there is an additional connection to those schema theories that have already played a role with regard to Halbwachs.[37] What has been outlined suggests the idea that all idealizations, all ‘abstract ideas’ could in fact have emerged from a process of accumulation and erasure. If perception constantly has to deal with different concretes, it would be the task of memory to superimpose these concretes, to ‘condense’ them and finally to transfer them into those schemata which, as Halbwachs shows, form the bulk of the contents of memory. The schemata would be the result of a describable process of abstraction; left by the wayside, as in the case of Galton’s composite photographs, would be what originally distinguished the individual perceptions as individual ones.

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[33] It should be remembered that Freud regards the psychic mechanism as a whole as the result of a layering: “As you know, I am working on the assumption that our psychic mechanism has come into being by a process of stratification (Aufeinanderschichtung); the material present in the form of memory-traces (Erinnerungsspuren) being subjected from time to time to a rearrangement (Umordnung) in accordance with fresh circumstances to a retranscription (Umschrift).” (Freud to Fliess, Oct. 20, 1895, quoted from Derrida, Writing and Difference, op. cit. p. 206). “When a town becomes a city or a child grows into a man, town and child disappear in the city and in the man. Only memory can sketch in the old features in the new picture; in reality the old materials and forms have been replaced by new ones. It is different in the case of psychic evolution. One can describe this unique state of affairs only by saying that every previous stage of development is preserved next to the following one from which it has evolved; the succession stipulates a co-existence […].” (Freud, Sigmund: Reflections of War and Death [1915]. NY: Moffat 1918, pp. 30f.

[34] Most theories of individual memory, as mentioned above, emphasize its selective nature.

[35] See chapter one of my book; W., Docuverse, op. cit., pp. 14-53.

[36] Derrida in particular has shown that this step is repeatedly present in the works of Freud himself (Derrida, Writing and Difference, op. cit., pp. 196ff.).

[37] (Note on translation:) The first sections of this chapter are on collective memory…

Only from this generalization, I think, do the references emerge that make the concept of condensation truly interesting for a media theory. First of all, the reference to Gestalt theory, which has shown that all perception is Gestalt perception, i.e. a recognition based on visual schemata with which the recipient confronts the perceived. As soon as one asks, together with Kittler, how gestalts arise,[38] one comes into the immediate vicinity of Galton's composite photography, for the formation of visual schemata is only conceivable in a process of iteration, in the repeated perception of similar objects. 'Accumulation,' 'generalization through superimposition,' and 'condensation' thus also seem to dominate the formation of the gestalts, except that, as for Freud himself, the place of accumulation is not the photographic plate but human memory.

Above all, however, and now the argument has finally reached the desired point, abstraction is a characteristic of *language*.

4. Theory of Signification – The Emergence of the *Signified* [39]

If condensation were a mechanism of human memory alone, it would have no place in a theory of media. Only the fact that condensation has been interpreted in terms of language theory makes it useful for a media-theoretical consideration, because only language as a semiotic system can be said to compete with other media in the same field.

So where does the bridge that Freud built from condensation to language lead? The central point has already been mentioned above: "A word being a point of junction for a number of conceptions, it possesses, so to speak, a predestined ambiguity, and neuroses […] take advantage of the conveniences which words offer for the purposes of condensation and disguise quite as readily as the dream."[40] Does this mean that *every word* must now be regarded as a 'junction,' and thus as a product of condensation?

It was Lacan who took up Freud's remarks and developed them into a coherent model of language.[41] And in this model, condensation is central:

> "Verdichtung, or 'Condensation,'" writes Weber in his Lacan commentary, "is the structure of the superimposition of the signifiers, which metaphor takes as its field […]. If we examine Freud's concept of condensation, we find at first not so much the idea of substitution as that of accumulation or 'compression' […]. A single idea or representation serves as the nodal point of different associative chains; considered from an economic perspective, this idea unites in itself the energetic cathexis of the chains with which it is in contact."[42]

And a second root of the idea, as Haverkamp shows, goes back to Saussure:

> "The projection concept, which Saussure uses to illustrate the transition from diachrony to synchrony [i.e. from discourse to the system of language], is made more precise by the idea of superimposed condensation [...]. Lacan developed these implications in an implicit critique of Jakobson by no longer speaking of the substitution that constitutes

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[38] Kittler, Friedrich A.: Discourse Networks 1800 – 1900 [1985]. Stanford (Cal.): Stanford UP 1990, pp. 320ff.; see also: Winkler, Hartmut: Der filmische Raum und der Zuschauer. Heidelberg: Winter 1992, pp. 130ff.

[39] As mentioned, the following section of my text has been shortened and revised for translation.

[40] Freud, The Interpretation of Dreams, op. cit., p. 315.

[41] Lacan, Jacques: The Instance of the Letter in the Unconscious or Reason Since Freud [1957]. In: Id.: Écrits. The First Complete Edition in English. NY/London: Norton, pp. 412-444; id.: The Signification of the Phallus [1958]. In: Écrits., op. cit., pp. 575-584; id.: The Four Fundamental Concepts of Psycho-Analysis [1964]. NY/ London: Norton 1981.

[42] Weber, Samuel M.: Return to Freud. Jacques Lacan's dislocation of psychoanalysis. NY: Cambridge UP, pp. 67f.

> the metaphor according to the range of variation of semantic equivalents, but of a 'layering' of signifiers, in which Freud's 'condensation' takes the place of the old concept of 'metaphorical transfer.'"[43]

But why – one might ask – metaphor? Lacan adopted the polarity of metaphor and metonymy from Jakobson.[44] In a fundamental attempt to systematize the mechanisms of language, Jakobson had linked metonymy to the syntagmatic axis (the actual chain of manifest discourse) and metaphor to the paradigmatic axes (which represent the semantic system of language). From this, Jakobson had concluded that Saussure's two concepts are in fact complementary to each other; juxtaposition (contiguity, discourse) and substitution/selection (similarity, language) represent the 'coordinate system' in which language as a whole is spread out.

Against this background, Weber and Haverkamp read Lacan in the same way: In 'condensation,' Lacan finds the mechanism that mediates between the two sides of language. And there are at least three arguments that support this. The first has already been mentioned in an earlier chapter:[45] the model of stratification that makes the meaning of linguistic elements dependent on the set of attested contexts in which the element has appeared in the past.[46] In this context, condensation is largely equated with the accumulation of connotations, compatible with the image of language as a network, which has also already been referred to.

The second argument is more difficult. Lacan sees the metaphor as the privileged example that shows how 'condensation' actually works. Every metaphor, says Lacan, implies a substitution;[47] you recognize a metaphorical expression by the fact that it does not quite fit the context; you perceive it as 'inauthentic,' and you conclude from this that it replaces another 'actual' expression that is no longer present in the text.[48] The replaced 'actual' expression, holds Lacan, thus becomes *latent*. It has left the realm that – Saussure says: in presentia – is manifest, in the open.

And this, Weber explains, leads directly to the third and decisive point:

> "A clearly determined relationship of presence and absence of the signifier is thus described here: the replaced, absent signifier is driven under the bar [i.e. the boundary of the unconscious], *as it were, into the realm of the signified* – one could say it is 'repressed' – yet, as an excluded and absent signifier it still remains present through its syntagmatic relationship to the rest of the chain. […]
> Thus, if metonymy marks the proper function of the signifier – that is, the formation of the signifying chain – the function of metaphor is no less indispensable […]. Metaphor confers its name on that movement of dependence, already noted in Saussure: *the self-*

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[43] Haverkamp, Anselm: Einführung in die Theorie der Metapher. In: Id. (ed.): Theorie der Metapher. Darmstadt: WBG 1983, pp. 15f. (transl. and add. H. W.).

[44] Jakobson, Roman: Two Aspects of Language and Two Types of Aphasic Disturbances. In: Id.: Fundamentals of Language. S-Gravenhage: Mouton 1956, pp. 55-82.

[45] See the first chapter of my book (pp. 48ff.).

[46] Once again in the original wording: "But it suffices to listen to poetry, which Saussure was certainly in the habit of doing, for a polyphony to be heard and for it to become clear that all discourse is aligned along the several staves of a musical score. Indeed, there is no signifying chain that does not sustain – as if attached to the punctuation of each of its units – all attested contexts that are, so to speak, 'vertically' linked to that point." (Lacan, The Instance of the Letter…, op. cit., p. 419).

[47] "Metaphor's creative spark [...] flashes between two signifiers, one of which has replaced the other by taking the other's place in the signifying chain, the occulted signifier remaining present by virtue of its (metonymic) connection to the rest of the chain. One word for another [substitution]: this is the formula for metaphor […]." (Lacan, op. cit., p. 422 (add. H. W.)).

[48] In the theoretical debate on metaphor, the substitution theory has been criticized…

> *precipitation of the signifier as signified*, which in virtue of the differential structure of signification must have always already been a signifier, in order to become a signified."[49]

This is the crux of the matter: *In essence, Lacan shows how signifiers give rise to signifieds*; how signifiers (i.e. manifest utterances, the manifest chain of text) turn into meaning.

It must be borne in mind that the traditional concept of the signified is thus redefined. The signified (the meaning) is not – as with Saussure – taken for granted as the counterpart of the signifier, but Lacan asks how the formation of signifieds comes about in the first place. And he deems the mechanism of metaphor as fundamental, because it is here that the displacement of the original signifier below the threshold of consciousness and the 'precipitation' can be directly observed.[50]

But can the ideas outlined here also provide a model for general language? First of all, it is interesting that Lacan's argumentation has obviously not left Freud's associative-psychological basis. If the repressed signifier, which has become the signified, actually remains connected to the elements of the rest of the chain, this is only possible through its associative links with them.[51] The net thus also carries elements that have no place in the manifest chain; and certain associations cross the 'bar,' even if they are not consciously accessible. The traditional concept of the signified is thus not avoided without reason; Saussure's signified would be available, lucid, and the property of the subject; Lacan, however, wants to emphasize that language – general language – precedes the subject, culture, and speech,[52] and that all speech speaks differently than what it says. This idea comes close to the outlined theory of 'forgetting' and the Mystic Writing-Pad.

It finds its limit where it imposes on the individual chain and the individual act of repression, which will actually have to be conceived as a process in intersubjective space (and a statistical effect over an infinite number of utterance acts). Lacan here extends the tradition of psychoanalysis, which has always focused its attention on the individual case rather than on 'the' language, and he makes it difficult to think of the formation of the signified in general according to the outlined pattern. But this is precisely the claim.

In addition, the question should be put to Lacan as to whether – and if so, in what sense – all signifieds are actually repressed and thus unconscious. Where the model suggests that Saussure's horizontal line is identical with the boundary between consciousness and the unconscious, it becomes a mystery how subjects (illusory or not) can deal with language and how they can understand language (illusory or not) as a collection of signifieds; there would be nothing to elucidate in terms of language theory if the subjects were not dominated by the idea of having the signified at their disposal and feeling 'at home' in language; and it is precisely this idea that seems to be constitutive of linguistic functioning.

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[49] Weber, Return to Freud, op. cit., pp. 57 (add. and emph. H. W.).

[50] The background, no doubt, is the experience of the psychoanalytic cure, "how this sort of analysis can reduce the text the most highly charged with meaning to insignificant trifles" (Lacan, The Instance…, op. cit., p. 416). It seems hopeless to assign meanings in the traditional sense to the chain of signifiers produced by the patient, because the actual meaning of what is said will always appear between the lines. Speech will circle around it and, in omissions or substitutions, mark the places where the actual meaning has been pushed under the 'bar,' '[present] as an excluded and absent signifier it still remains present through its syntagmatic relationship to the rest of the chain.'

[51] However, this is in no way a 'syntagmatic' relationship, as Weber says, because the terms syntagmatic and absent are fundamentally incompatible.

[52] See: Lacan, The Instance…, op. cit, p. 414; "This signifying game of metonymy and metaphor is played […] where I am not […]: I am thinking where I am not, therefore I am where I am not thinking." (Ibid., p. 430).

Thus, it should be insisted that the manifest signifiers are not confronted with the unconscious, but with language as a combined conscious-unconscious structure. Only from this perspective is it possible to ask about the significance of conventions and intersubjectivity and to include the systemic character of language.

And finally, speaking of condensation only makes sense if its quantitative-statistical-cumulative aspect is not lost in the course of the argumentation. Condensation, too, will have to be assigned an arena outside the actual chains, a place where something can 'precipitate' in order to then confront the material-present chains as an instance of persistence.

5. Semiotic Conclusions: Condensation, Language, Discourse and System

This is precisely where the proposal presented here comes in. It essentially states that language and memory – conceived as a machine of forgetting – constitute this arena.

It should be indisputable that language must be thought of as a precipitation and as the product of condensation – both in the direct sense of Freud and Lacan. However, it is now crucial to move beyond psychoanalysis to a generalized model: As soon as one asks what is precipitated and what is condensed, there is only one possible answer that simultaneously points to the most general semiotic mechanism imaginable: *It is speech that is precipitated in language*. And language, conversely, represents the condensed product of all past linguistic events.[53]

This formula initially means that the linguistic structure is made radically dependent on material utterances, on speech. Speech is ingested by language, is 'forgotten' into the linguistic structure. So when Assmann/Assmann write, "As a rule, the stream of speech flows into the sea of forgetting,"[54] this is right and wrong at the same time; wrong if forgetting means losing, and right if what has been forgotten is nevertheless preserved in condensation; and when Dotzler (quoting Babbage) says that there is no danger of a person's actions falling victim to oblivion because the air, as an immeasurable library, stores all the words ever spoken,[55] this nightmare is fortunately not true either. Forgetting and preserving, the accumulation of meanings and the purification of discursive space must be thought of as intertwined, and language appears as the social machine that ensures the rapport between these two moments in a sovereign manner.

Understanding the system of language as the product of condensation has proved its worth in connecting the two 'places' of language in a new way. The linear texts in the outer space and the semantic structure in the inner space of memory are indeed complimentary to each other. Discourse turns into system; and syntagmatic sequences turn into paradigmatic/associative relationships. And if it was said above that language represents a 'transmission belt,' then condensation now describes the transition, much more concretely, as a quantitative-cumulative process.

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[53] The term 'speech' here refers to all utterances and texts, not primarily oral communication. If this is the most general semiotic mechanism, it must be noted that it has not been named by classical semiotics and its consequences have not been examined. Either too self-evident (trivial?) or too general, it has fallen through the cracks of both the structuralist models and the post-structuralist approaches that have directly addressed discourse, articulation, and the material chain.

[54] Assmann, Aleida; Assmann, Jan: Schrift und Gedächtnis [1983]. In: Id.; Hardmeier, Christof (ed.): Schrift und Gedächtnis. Archäologie der literarischen Kommunikation. München 1993, p. 266 (transl. H. W.).

[55] "Every emotion sends out waves that – strictly speaking – never cease to exist. So does every spoken word: 'The vibrations of the air, once the human voice has set them in motion, do not cease to exist with the sounds they produce.' That is why 'the air itself [...] is an immeasurably large library, on whose pages is written forever what has ever been said by men or breathed by women.'" (Dotzler, Bernhard J.: Nachrichten aus der früheren Welt – und Zukunft. Zur Programmierbarkeit der Literatur mit und nach Babbage. In: Bolz/Kittler/Tholen (eds.): Computer als Medium. München: Fink 1994, pp. 41f. (transl. H. W.)).

The view outlined in this way is already indicated by Saussure when he describes the synchronic system of language as a "product of the past"[56] or says that "language […] is a treasure that the practice of speaking has accumulated in people belonging to the same linguistic community."[57] These statements can now be deciphered as placeholders for the developmental model that links diachrony and synchrony and that has always been missed in Saussure.[58] The formulation "spatial co-ordinations [i.e. the syntagmatic chain] help to create associative co-ordinations"[59] shows, however, how undecided Saussure was on this question;[60] and this also applies in a similar way to other authors who have put forward this thesis.

Bühler, for example, suggests that language absorbs the situations of its use in order to make them available in a conventionalized form for further use,[61] and Goody/Watt outline a semantic model which, restricted to oral cultures, interweaves the formation of tradition, language, and 'structural amnesia;'[62] Flusser shows how language is processed by each writer and passed on to subsequent writers,[63] and Lyotard, finally, describes at one point that language 'charged with earlier uses' always exceeds current intentions.[64]

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[56] Saussure, Course in General Linguistics, op. cit., p. 8; "[…] language always appears as a heritage of the preceding period." (Ibid., p. 71).

[57] Ibid., p. 13.

[58] Comparable: "[We] can add that everything diachronic in language is diachronic only by virtue of speaking. It is in speaking that the germ of all change is found. Each change is launched by a certain number of individuals before it is accepted for general use. Modern German uses 'ich war,' 'wir waren,' whereas until the sixteenth century the conjugation was 'ich was,' 'wir waren' (cf. English 'I was,' 'we were'). How did the substitution of 'war' for 'was' come about? Some speakers, influenced by waren, created war through analogy; this was a fact of speaking; the new form, repeated many times and accepted by the community, became a fact of language." (Ibid., p. 98 (The original text reads 'ich war'… without quotation marks).

[59] Ibid., p. 128 (add. H.W.).

[60] Weber comes to the conclusion: "Diachronic 'events,' on the other hand, while they can produce facts, can never generate a language, insofar as language must possess the quality of a system." (Weber, Return to Freud, op. cit., p. 33).

[61] Bühler, Karl: Theory of Language. The representational function of language [1934]. Amsterdam/Philadelphia: John Benjamins 2011, p. 161.

[62] "In Durkheim's words, these [language-] categories of the understanding are 'priceless instruments of thought which the human groups have laboriously forged through the centuries and where they have accumulated the best of their intellectual capital.' The transmission of the verbal elements of culture by oral means can be visualized as a long chain of interlocking conversations between members of the group. Thus all beliefs and values, all forms of knowledge, are communicated between individuals in face-to-face contact; and, as distinct from the material content of the cultural tradition, whether it be cave-paintings or hand-axes, they are stored only in human memory." "[T]he meaning of each word is ratified in a succession of concrete situations, accompanied by vocal inflexions and physical gestures, all of which combine to particularize both its specific denotation and its accepted connotative usages. This process of direct semantic ratification, of course, operates cumulatively […]." And: "The social function of memory – and of forgetting – can thus be seen as the final stage of what may be called the homeostatic organisation of the cultural tradition in non-literate society. […] What continues to be social relevance is stored in the memory while the rest is usually forgotten: and language – primarily vocabulary – is the effective medium of this crucial process of social digestion and elimination […]. […] [A] common example of the general social phenomenon which J. A. Barnes has felicitously termed 'structural amnesia' […]." (Goody, Jack; Watt, Ian: The Consequences of Literacy. In: Comparative Studies in Society and History, vol. 5, no. 3 (Apr. 1963), pp. 304-345, here: pp. 305-309 (add. H. W.)).

[63] "In his struggle with language, a writer reworks the information of previous writers freshly, producing new information from it, passing it on to the next writers so that they may produce new information in turn." "So these languages have become extremely fine and valuable instruments." (Flusser, Vilém: Does Writing Have a Future? [1987], Minneapolis/London: University of Minnesota Press 2011, p. 34).

[64] "And even then, when they [the words, sentences] are already inscribed on the page or the canvas, they 'say' something other than what they 'wanted to say,' because they are older than the present intention, charged with

Against the background of these statements, it is above all a systematization or radicalization that the argument presented here proposes. Reformulated into a general semiotic mechanism, this would mean: Language is *nothing* but what accumulates in the course of discourse, and it only receives its form in the transformation of discourse into system.[65] It is completely dependent on speech, but – and this would be the objection to the positions of Derrida and Lacan – it does not coincide with the current chain, the discourse, and the utterances.[66] Intertwined with memory, it forms the counterpart of speech, a place of persistence, a counter-instance.[67] Language is the structural memory of speech, and it can only function because it makes use of distributed human memories (and their ability to forget in condensed form).

Language is the instance that transforms – at the level of society and through accumulation – syntagmatic relations into paradigmatic relations, and the immense variety of external texts into a system of 'meanings' that can be 'mastered,' concisely and economically, by the individual speaker.

And now we need to go one step further. Language itself is now to be conceived as a 'memory,' and this by no means in a metaphorical sense. The idea that the individual words (as the smallest units of language) must be regarded as 'memory' and as the result of condensation is surprisingly self-evident in theory.

> "Technology is explicitness," writes McLuhan, "[...] The spoken word was the first technology by which man was able to let go of his environment in order to grasp it in a new way. Words are a kind of information retrieval that can range over the total environment and experience at high speed."[68]

And Foucault, more nuanced:

> "And this link between language and knowledge opens up a whole historical field […]. Something like a history of knowledge becomes possible; because, if language is a spontaneous science, obscure to itself and unpractised, this also means, in return, that it will be brought nearer to perfection by knowledge, which cannot lodge itself in the words it needs without leaving its imprint in them, and, as it were, the empty mould of its content. Languages, though imperfect knowledge themselves, are the faithful memory of the

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earlier uses, connected with other words, sentences, tones, sounds. This is precisely what creates a field, a 'world,' the 'good' human world." (Lyotard, Jean-François: Ob man ohne Körper denken kann. In: Gumbrecht, Hans Ulrich; Pfeiffer, K. Ludwig (eds.): Materialität der Kommunikation. Frankfurt a. M.: Suhrkamp 1988, pp. 823f. (transl. and add. H.W.)).

[65] "An dem Bau der Begriffe arbeitet ursprünglich, wie wir sahen, die Sprache." ("As we have seen, originally language, and in later times, science, works on the construction of concepts." (Nietzsche, Friedrich: On Truth and Lie in an Extra-Moral Sense. Oxford: Quadriga, 2019, p. 12)).

[66] On the transition from the structuralist system assumption to the concept of discourse (and on the unfortunate juxtaposition of discourse and 'thinking'), see Foucault, Michel: The Archaeology of Knowledge and the Discourse on Language [1969]. NY: Pantheon 1972, pp. 26ff.

[67] Of course, only a relative persistence, insofar as language is also subject to development. Saussure devoted a separate consideration to the moment of persistence (Id., Course in General Linguistics, op. cit. p. 71ff.).

[68] McLuhan, Marshall: Understanding Media. The Extensions of Man [1964]. Cambridge (Mass.)/London: MIT 1994, pp. 56f.; see also: "Like words and language, money is a storehouse of communally achieved work, skill, and experience." (Ibid., p. 136) And: "The classic curse of Midas, his power of translating all he touched into gold, is in some degree the character of any medium, including language. This myth draws attention to a magic aspect of all extensions of human sense and body; that is, to all technology whatever. All technology has the Midas touch. […] Language, like currency, acts as a store of perception and as a transmitter of the perceptions and experience of one person or of one generation to another. As both a translator and store house of experience, language is, in addition, a reducer and a distorter of experience. The very great advantage of accelerating the learning process, and of making possible the transmission of knowledge and insight across time and space, easily overrides the disadvantages of linguistic codifications of experience." (Ibid., pp. 139f.).

> progress of knowledge towards perfection. They lead into error, but they record what has been learned. […] What civilizations and peoples leave us as the monuments of their thought is not so much their texts as their vocabularies, their syntaxes, the sounds of their languages rather than the words they spoke; not so much their discourse as the element that made it possible, the discursivity of their language. 'The language of a people gives us its vocabulary, and its vocabulary is a sufficiently faithful and authoritative record of all the knowledge of that people.'"[69]

The individual words can only be 'information memories' if they accumulate the meanings made available by the syntagmatic environment of past utterances. If we add the idea that the meaning of a word is determined by the position it occupies in the network of negatively differential references, we must conclude that speech works on the network of language by fixing and successively changing positions, building up and dismantling relations, strengthening, weakening, or restructuring them.

And this is the core of the statement that syntagmatic proximity turns into paradigmatic relations. Linear syntagmatic chains are reworked into n-dimensional paradigmatic references, in the 'run through the net' existing facilitations are confirmed, reinforced, or eroded. If words, to put it more concretely, have meaning insofar as they accumulate connotations, then this is a quantitative process, but not an accumulation of substance.

In addition, whenever language is conceived as condensation and words as 'memory,' the intersubjective dimension must also be considered; against Lacan, we have to insist that condensation is only conceivable at all in intersubjective space, as a statistical effect. Alongside persistence in time (memory), this is the second moment of inertia that language opposes to its modification through speech.[70]

From Freud and Lacan, then, we must proceed to a more general concept of language. And this applies above all to the problem of how the connection between signifier and signified must be conceived. If Lacan said that what appears as a signified must have been in the position of the signifier beforehand (i.e. it is fundamentally a signifier that is precipitated as a signified),[71] this is now relatively easy to spell out; assuming the described condensation process to be valid, it is indeed a signifier (a manifest sign in external space) that establishes itself as a signified, an element of the linguistic system in memory.[72] This is additionally mediated by the determination that it is not only *one* signifier that, pushed under the bar, is precipitated as a signified, but a whole number of repeating signifiers that – the precondition for 'condensation' as a quantitative cumulative process – additively define the same signifying position.

From here, an unexpectedly direct reference to the problem of abstraction arises, which, not addressed by Lacan, is the second essential condition of the formation of the signified. In connection with Galton's composite photographs, the idea was already raised that a simple superimposition of image content produces abstraction effects; and Bergson made schema memory dependent on physical-habitual repetition. Harth, who references Bergson, now proposes that this mechanism can also be fruitful for the understanding of cognitive processes:

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[69] Foucault, Michel: Order of Things [1966]. London/NY: Routledge 2005, pp. 96f. (F. quotes Diderot's Encyclopedia). Foucault limits the validity of the model outlined in this way to the 'classical period.'

[70] Completely parallel to Saussure, op. cit., p. 71f.

[71] Lacan, The Instance…, op. cit., p. 437; and in parallel: Derrida, Jacques: Of Grammatology. Baltimore: Johns Hopkins UP 1997, p. 73.

[72] Since Lacan himself modifies Saussure's concepts and includes the entire linguistic system in the concept of the signifier, this separation is also less clear in his work.

> "The senso-motorically stored 'images' of past experiences make it possible to add up the perceptions made now, in the present, with earlier ones, as it were. With this observation, Bergson assigns memory a decisive role in the process of generalization. One only has to translate his body thesis into a consciousness thesis. For only when the self 'retains' something common (a formative schema) in its consciousness in the course of its experiences, none of which is ever completely identical with the other, is it able to generalize, to abstract, to categorize."[73]

The path outlined in this way leads from the individual event (the individual utterance, the individual sign) directly to the schema, to the concept and – to the signified. Single event, repetition, cumulation, and abstraction seem to be connected in a regular way; and if signifieds (concepts) are characterized by leaving behind most of the concrete determinations of the conceived objects, their text, and their contexts, and by asserting a general concept in spite of the concrete differences, then repetition and cumulation are the mechanisms that moderate between single event and concept.

That language is more 'economical' than the immense surface of texts, that we 'forget' texts in order to remember language, and that language never reaches the concretion of what is to be grasped – all this has its reason here. Signifiers precipitate as signifieds, but they do not remain what they are; decontextualized and stratified they form a distillate; in polemic against the concrete contexts from which they originate, 'aliens,' as Bühler writes, in the contexts into which they will enter.[74]

Only a very general description of the process of signification seems capable of making the idea of condensation actually fruitful for a theory of language; and a satisfactory formulation is certainly still pending. The idea that it plays a decisive role in the connection between language and speech and that the condensing memory cannot be excluded from the functioning of language can hardly be denied.

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[73] Harth, Dietrich: Einleitung: Gedächtnisbilder und Erinnerungsspuren. In: Id. (ed.): Die Erfindung des Gedächtnisses. Frankfurt: Keip 1991, p. 39 (transl. and add. H.W.). Rainer Warning points to a passage in Hegel: "Abstraction, which occurs in the ideational activity by which general ideas are produced (and ideas *quâ* ideas virtually have the form of generality), is frequently explained as the incidence of many similar images one upon another and is supposed to be thus made intelligible. If this super-imposing is to be no mere accident and without principle, a force of attraction in like images must be assumed, or something of the sort, which at the same time would have the negative power of rubbing off the dissimilar elements against each other. This force is really intelligence itself, - the self-identical ego which by its internalizing recollection gives the images *ipso facto* generality, and subsumes the single intuition under the already internalized image." (Hegel's Philosophy of Mind. Being part three of the Encylopaedia of the Philosophical Sciences [1830]. NY: Oxford University Press 2003, p. 207); see also: Warning, Rainer: Claude Simons Gedächtnisräume: La Route des Flandres. In: Haverkamp, Anselm; Lachmann, Renate (ed.): Gedächtniskunst. Raum – Bild – Schrift. Frankfurt a. M.: Suhrkamp 1991, p. 365).

[74] Bühler, Theory of Language, op. cit., p. 208.

4 Geometry of Time

Media, Spatialization, and Reversibility [1]

"In order to study the world, you have to stop it."
Hiroshi Sugimoto (photographer)

1. Intro

Media theory describes *transmission* and *storage* as two basic media functions that are fundamentally opposed and quite different in quality. There must, however, be a way to think about how they are linked. Can transmission and storage be functionally related? Are there concepts that bridge the difference?

A first proposal to address those questions was made by Harold Innis, who defined media as overcoming space and time. Not surprisingly, overcoming space corresponds to the media techniques of transmission; and secondly, Innis asks about storage, time, and the formation of tradition. Some of the ancient empires, he writes, aimed to dominate space – here he chooses the Romans as an example – while others predominantly cared about their continuation, about the domination of time, as in the case of Egypt;[2] Innis discusses space and time largely in parallel, but an actual bridge between space and time is still missing.

Media, however, and this is quite astonishing, have the ability *to translate time into space and space into time*. This is of some relevance to the question of how the functions of media – transmission and storage – are interconnected. It was Bernhard Vief who worked out this idea with particular clarity, and I have therefore chosen his texts as a starting point. In addition, the third media function – processing[3] – will also come into play when Kittler talks about 'time axis manipulation.'

Primarily, and this is why the point is so interesting, I want to show that the functioning of the media as a whole depends on a 'spatialization': Media can be determined by the fact that they snatch things from the flow of time in order to represent them spatially. Vief, Kittler, and Krämer have all argued this – in different ways – and I will use this idea as a basis for my own considerations; in my view, this is the key to a new, structural understanding of media and the decisive criterion that distinguishes media from other social systems.

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[1] Main chapter of the book: Winkler, H.: Prozessieren. Die dritte und vernachlässigte Medienfunktion. Paderborn: Fink, pp. 233-254; the German text is available online:
http://homepages.uni-paderborn.de/winkler/Winkler--Prozessieren.pdf.

The title *Geometry of Time* has been taken from a text by Bernhard Vief
(Id.: Transplantation im Digitalen – Über die anatomische Arbeit der Binärschrift.
userpage.fu-berlin.de/~sybkram/medium/vief. html, last accessed on 02/17/2007; the page is dated 11/11/1998).

[2] Innis, Harold A.: Empire and Communications [1950]. Lanham: Rowman & Littlefield 2007, pp. 32ff., 106ff.

[3] "[...] It is therefore about media technologies, about transmission, storage, processing of information". (Kittler, Friedrich: Foreword. In: Id.: Draculas Vermächtnis. Technische Schriften. Leipzig: Reclam 1993, pp. 8-10, here: p. 8 (transl. H. W.)).

2. The Hare and the Hedgehog

Let us begin with a concept that was presented by Bernhard Vief at a conference in 2007.[4] Vief bases his idea on a fairy tale that enjoys great popularity in Germany, namely *The Hare and the Hedgehog*.[5] The plot is briefly summarized as follows: Hare and hedgehog meet in a field. When the hare begins to make fun of the hedgehog for his short legs, the latter will not take it and challenges the hare to a race; the hare accepts, they are each to run in their own furrow. Against all odds it is the hedgehog who wins the race. The unfortunate hare runs but he does not stand a chance – when he gets to the finish the hedgehog is already there. The race is repeated time and again until the hare – completely exhausted – collapses dead on the ground, never to find out the solution: the hedgehog had positioned his wife at the other end of the furrow.

Vief goes on to explain that in the domain of the media both principles − the hare principle and the hedgehog principle − play a pivotal role. The hare represents transmission. Like a letter, he overcomes geographical constraints by moving his body from A to B. In doing so, he uses time – too much time, in fact, compared with the hedgehog. Telegrams may be relatively faster; however, their transmission still takes time.

The hedgehog represents a principle that is entirely different, namely simultaneity. The fact that there are two of them saves the transport. In terms of the media, this principle is achieved by way of technical reproduction – copying techniques, as it were. If some several thousand copies are produced, they can be made available simultaneously in different places; the same technique is also used by the radio to deliver its message: like the hedgehog, it addresses its receivers in parallel fashion.

Vief generalizes: The principle of transmission is *temporal*. Transmission is bound to time, which is what makes the hare slow even if, in fact, he is quick. However, where pure transmission is concerned, telegraphy is able to operate at the speed of light. In a vacuum this would entail a speed of just below 300,000 kilometers per second. In other words, the hare would be so fast that − within empirical boundaries − we are led to think in terms of simultaneity. According to Vief, however, the problem soon becomes clear if we attempted to talk to a Jupiter spacecraft. Regardless of operating at the speed of light and in a vacuum, our question would still take approximately 20 minutes to arrive in space, implying that we would have to wait some 40 minutes for the answer, thus severely constraining the joys of reciprocal communication or real dialogue.

The printed edition, on the other hand, operates like the hedgehog – it uses the logic not of empirical but of actual simultaneity. It has gone beyond the constraints of time. But – referring back to our initial question − how are the two principles related?

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[4] To date the following texts by Vief are only available in German:
- Vief, Bernhard: Die Inflation der Igel − Versuch über die Medien. In: de Kerckhove, Derrick; Leeker, Martina, Schmidt, Kerstin (ed.): McLuhan neu lesen. Kritische Analysen zu Medien und Kultur im 21. Jahrhundert. Bielefeld: Transcript 2008, pp. 213-230. Individual theses overlap with earlier works by Vief:
- Id.: Transplantation im Digitalen, l.c.; see particularly Section 5: Geometrie der Zeit.
- Id.: Über die Unschärfe von Zeitschnitten. In: Transit (ed.): On The Air. Kunst im öffentlichen Datenraum. Wien 1994, pp. 135-158.
- Id.: Digitaler Raum. In: Die Auflösung der Medien im elektronischen Raum. Kunstgespräche 1992, Eremitage in Schwaz/Tirol. transit.tiroler-landesmuseum.at/kunstgespräche/vief.html, last accessed on 12/30/07.

[5] Grimm's Fairy Tales [1812]. The English translation of the fairy tale can be obtained on: http://www.pinkmonkey.com/dl/library1/story068.pdf, last accessed on 22/02/09.

3. Geometry of Time

The prime example to provide in this context, also for Vief, is the written word. Writing systems − at least phonetic, Western writing systems − are based on spoken language that has been translated into script. While oral expressions operate successively – producing a temporal stream of signs – writing is what transforms this temporal succession into a *spatial co-existence*. The line is still linear; however, linear not in terms of time but in terms of space. The dimension of time is thus projected onto a spatial axis, in other words, the linearity of the line.

> "Sounds are temporal and move within the flow of time. They belong in a different dimension from images. Images exist on the plane and − in the case of sculptures − in space. Thus they follow a different order, which, to some degree, is incompatible with a temporal order. What the alphabet achieves therefore goes far beyond the simple translation of sounds into images; rather it projects a temporal event onto a plane − a *Geometry of Time*."[6]

> "Following Heraklit, the stream of time is continuous: 'One cannot enter the same river twice.' The alphabet, however, is based on a different time concept which perceives time to be a separable body that can be divided into time spans and points in time. Any phonetic spelling – which is what the conventional alphabet represents – is based on this condition. Likewise, the possibility of sending bits through copper wires or fiber glass. Plane segments are now assigned to time segments: each phoneme is assigned a letter, each point in time is assigned a point on the plane − literally, as it were, on a piece of paper, on a magnetic disk, on a CD."[7]

Quite unexpectedly, this leads us directly to the crux of the matter:

> "When time is transferred onto the plane, something rather outrageous happens: *time becomes reversible.* In contrast to points in time – and this almost sounds trivial – points on the plane can be actually reversed. This makes it possible to return to them, to access them as required, and to 'reproduce' them. Storing and repeating events also allows us to return to certain points in time, albeit superficially. In other words, points in time can be turned into points on the plane which again can be turned into points in time. However, this would also entail that points in time become interchangeable – and their temporal character would be negated."[8]

The decisive keyword here is *reversibility*. Reversibility represents the promise that it is possible to liberate ourselves from the dictatorship of the time axis. Time is characterized by the fact that it elapses – *irreversibly*. We experience this most profoundly when we experience death, this deep caesura in time that can by no means be inverted or reversed.[9]

In this context, the thesis put forward by Vief − a very substantial thesis – is that reversibility can only be achieved by transferring temporal actions into space. *Technical transformation − technically converting time into space − is the only basis on which reversibility can be achieved at all.*

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[6] Vief, Transplantation…, l.c. (transl. H.W.).

[7] Ibid.

[8] Ibid. (emphas. H. W.).

[9] On a sidewalk in Frankfurt/Main in Germany a small crowd has gathered; amidst the people a man is lying on the ground, with two paramedics and a doctor looking after him. In answer to my question of what has happened someone says: "Well, he was dead!".

4. Reversibility, Krämer

The notion of reversibility itself is not entirely new. Reversibility, namely, the possibility of intervening with the time axis, has already been discussed, for example, by Friedrich Kittler. Kittler's book *Discourse Networks* has gained wide recognition also in the United States. In 2004, Sybille Krämer compiled an account of Kittler's lifework, subsumed under the heading 'The Cultural Techniques of Time Axis Manipulation.'[10] The term that was coined by Kittler himself;[11] what is new, however, is that she perceives this concept to be the central theme underlying Kittler's world of thought:

> "Media technology: The reversal of units of time. This provocative question is precisely the one that leads us to the crux of Kittler's thought, and hence to the aspects of his method of thematizing media history that bring a new impetus to the approach. In order to answer this question, I will attempt to contextualize the technological within our traditional methods of managing time. Indeed, the explanation of the technological as a modality of time management is precisely the 'main point'."[12]

Krämer furthermore illustrates:

> "The most basic experience in human existence – and this is relevant because man is, after all, a physical being – is the irreversibility of the flow of time. Technology provides a means of channeling this irreversibility. In media technology, time itself becomes one of several variables that can be manipulated.
> In the age of writing and of the book, symbolic time, by being fixed in space with linear syntactical structures, becomes repeatable and, to some extent, also moveable. What is unique about the technological era (from the gramophone to the computer) is that these technologies allow one to store 'real time' – in other words, those processes that cannot be fixed by syntactical structures and are thus not irreversible, but rather contingent, chaotic, and singular – and, at the same time, to process 'real time' as a temporal event. Data processing becomes the process by which temporal order becomes moveable and reversible in the very experience of space."[13]

She concludes:

> "The only techniques that can be considered data processing are those that use a spatial means to create possibilities of ordering the things *differently* that are etched into this spatial order. This notion carries specific consequences for Kittler's concept of storage. Storing is not merely a means of preserving but is also intrinsically connected to spatial order. Wherever something is stored, a temporal process must be materialized as a spatial structure. Creating spatiality becomes the primary operation by which the two remaining functions of data processing – transporting and processing – become possible at all."[14]

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[10] Krämer, Sybille: The Cultural Techniques of Time Axis Manipulation: On Friedrich Kittler's Conception of Media [2004]. In: Theory, Culture & Society, No. 23:7-8, 2006, pp. 93-109.
Krämer is one of the most important media theorists in Germany; however, only few of her texts have been translated into English to date: https://www.sybillekraemer.de/publications/.

[11] For example, in the text: Kittler, Friedrich: Real Time Analysis. Time Axis Manipulation [1990]. In: Id., Draculas Vermächtnis, op. cit., pp. 182-207. And previously in 'Gramophone, Film, Typewriter.'

[12] Krämer, The Cultural Techniques..., l.c., p. 96 (the German text is more transparent than the English version).

[13] Ibid. (last sentence italicized in the original).

[14] Ibid., p. 99.

5. Kittler

The above thus leads us back to Kittler and the year 1986 when he suggested the following; the relevant points being somewhat mentioned in passing:

> "Prior to the electrification of media […] there were modest, merely mechanical apparatuses. Unable to amplify or transmit, they nevertheless were the first to store sensory data: silent movies stored sights, and Edison's phonograph […] stored sounds. […] Ever since that epochal change we have been in possession of storage technologies that can record and reproduce the very time flow of acoustic and optical data. […]
> What phonographs and cinematographs, whose names not coincidentally derive from writing, were able to store was time: time as a mixture of audio frequencies in the acoustic realm and as the movement of single-image sequences in the optical. Time determines the limit of all art, *which first has to arrest the daily flow in order to turn it into images or signs.*"[15]
> "That is precisely the function of audiotapes in sound processing. Editing and interception control make the unmanipulable as manipulable as symbolic chains had been in the arts. […] When the voices of Waters and Gilmour [musicians of the band Pink Floyd] were unable to hit the high notes in 'Welcome to the Machine,' they simply resorted to *time axis manipulation*; they dropped the tape down half a semitone while recording and then dropped the line in on the track".[16] "Real Time Analysis".[17]

Subsequently, a text was published in 1990 under the programmatic heading: 'Real Time Analysis. Time Axis Manipulation,'[18] in which the significance of Kittler's argument is expressed more forcefully:

> "A thesis on information-theoretical materialism could begin as follows: Only what can be switched does in fact exist. Thus spoken language is disregarded from the outset; according to Hegel, who ruthlessly claims that 'sound exists only when it is going out of existence.' Admittedly, the spoken word can be learned off by heart in order to say or sing it again. It would be difficult, however, to change the order of those repeated words, for example, beginning at the end without paying much attention to their syntactic structure. *But this is precisely what time axis manipulation refers to – a different reordering of a serial data stream.* […] *On the time axis, however, manipulating the notions of ordering and analyzing seems to be different and more complex than in space.* […] First and foremost, time axis manipulation requires real-time serial data streams (to the dismay of many philosophers) to be able to relate to spatial coordinates. […] It goes without saying that, from a historical perspective, writing systems were the first time manipulation techniques to emerge. This is particularly evident in the alphabet where characters allocate a spatial position to each element of the time-serial discourse chain."[19]

The fact that the points made at the beginning are easily overlooked only serves to highlight the actual brilliance of Krämer's analysis. While the majority of readers would simply attribute Kittler's preference for storage media to his 'technological determinism,' Krämer provides us with a more sophisticated approach – it is all about processing. Storage is seen to be the systematic basis that renders intervention and manipulation possible in the first place. The

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[15] Kittler, Friedrich A.: Gramophone, Film, Typewriter [1986]. Translated, with an introduction, by Geoffrey Winthrop-Young and Michael Wutz. Stanford, Cal. 1999, p. 3 (emphas. H.W.).

[16] Ibid., p. 109f. (add. & emphas. H.W.).

[17] Ibid., pp. 116, 127.

[18] Kittler, Real Time Analysis, op. cit.

[19] Ibid., p. 182f. (transl. & emphas. H.W.).

Intriguing thing, however, is that her reconstruction focuses on processing, not on storage.

This also clarifies the tradition that links the three authors cited here: Kittler's contribution is to have introduced the argument in the first place (1986). In 1992, Vief takes up the thesis of spatialization again and subsequently integrates it systematically in his own approach; while Krämer, who is very familiar with the Viefian texts,[20] suggests in 2004 to center all of Kittler's work relating to the notion of spatialization/time axis manipulation.

So what do we gain from Vief? Are not all the elements required for our thesis contained in the work of Kittler already? In my opinion, the difference lies in the fact that Vief – as opposed to Kittler – holds onto the notion of *transmission*, albeit as an antonym. For Vief, time is doubly determined. On the one hand – a view shared by Kittler, Vief and Krämer – we are dealing with time that is 'spatialized;' the basis for reversing and manipulating data. On the other hand, however, Vief is also interested in the particular time *that transmission requires* as it is only from this viewpoint that the image of the hare and the hedgehog actually makes sense.

Thus the question becomes two-fold, which is why I propose to deal with the two variants of the thesis separately at first. Admittedly, this approach may render the problem more complex; however, we must grant it to Vief that he also takes a more in-depth perspective. Let us begin with the notion of transmission.

6. Spatialization_1: Vief's Hedgehog

Based on the hare, 'space' refers to geographical space, and Vief made the point that overcoming geographical distances takes *time*. The alternative approach can be found in the hedgehog principle: Loss of time can be prevented if – instead of a single one – there are several copies available that can be distributed in several locations. This option is provided by technical reproduction. Instead of focusing on time (transmission) we have shifted our focus to spatial simultaneity; it is in this regard that also the hedgehog principle can be understood as 'spatialization.'

7. Space and Time

In order to expand and systematize this notion, we need to leave the above authors and begin to develop our own thoughts. It seems a good starting point to return to Innis – the reputable specialist for space and time in the media. In the words of Innis, transmission overcomes space; and in complete parallel, storage aims to overcome time.

	overcomes	
transmission	space	
storage	time	

The hare shows us that transmission takes time:

	overcomes	consumes
transmission	space	time
storage	time	

[20] Krämer has published one of Vief's relevant texts on her own web page.

Consequently, it follows that storage as a kind of spatialization will take up nothing but – space. This result is striking – a crosswise imbricated structure, displayed in the diagram below:

	overcomes	consumes
transmission	space	time
storage	time	space

This diagram is new, and I think it offers salient, fresh perspectives.

8. Temporalization

The prime advantage is that space and time appear to be fully on a par or symmetrical. Can we therefore assume that the two notions are equivalents that offset each other mutually? Then it would follow that – parallel to 'spatialization' – the reciprocal process of 'temporalization' would need to be stipulated.

Vief, even though his own argument eventually pursues a different direction,[21] also applies this notion. He illustrates 'temporalization' by using the example of image digitalization:

> "What happens if [an] image is temporalized? What happens to the image and what happens to time? Firstly, the screen is bit-mapped, then the bits are transferred into a state of succession. This is necessary if I want to send them through a data cable to a different continent on the other side of the globe where they are reassembled to form an image. In other words, I am transmitting points on the plane because the image exists on a plane into something that is not a plane. I transfer it into points in time, namely into a state of succession, one after the other. On the recipient side, I need to do the opposite, i.e. I need to reassemble the points in time into something that is not temporal, namely, points on the plane, in order to create a meaningful image." "As it stands, binary code for television is already being set up. Like in a conventional film the electronic image must be broken up into image segments and time segments to be able to move."[22]

Images (spatial representations) are digitalized by dissecting them into a linear sequence of individual binary signs. In this sense, digitalization is *temporalization*, and it is only by means of temporalization that images can be sent through a cable in the form of a successive data stream.

If it were therefore possible to show that 'temporalization' is parallel to 'spatialization,' I would stipulate – at least for the time being – to view the two of them as equivalents. This would open up the possibility of reinterpreting the media as a whole. It follows that by no means are constraints based entirely on time (which the media do overcome through 'spatialization'). Obviously, constraints are equally based on space (such as spatial distance) which transmission overcomes by using time.

If this were plausible, the media would need to be defined as machines that cleverly switch back and forth between space and time in order *to overcome the constraints of time by means of space, and the constraints of space by using time*.

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[21] "In this context, the concept of image temporalization has manifested itself in media studies. I wish to challenge this concept […]." (Vief, Über die Unschärfe…, l.c., p. 144). The relevant reasons will be discussed below.

[22] Ibid., p. 144f., 144 (transl. H. W., in the original: the image).

9. Spatialization_2: Storage / Reordering

Convenient generalizations like these must be immediately met with skepticism, however. Is it not the case that in reality, these concepts are still separated by a wide gap? Recalling that Kittler emphasizes the notion of processing rather than storage, we notice that processing has not yet been included in the diagram developed so far.

In addition, the spatial concepts differ. Between Kittler's storing/processing and Vief's hare is a leap in scale, if 'storage' refers to saving data in a particular location, i.e. a local operation, while 'transmission' (hedgehog and hare, respectively) aims to grasp the concept of overcoming geographical distances. I have already discussed the difference between these two spaces above. And finally, the question is which path leads from here back to the core of the hedgehog, the technical reproduction.

10. Cycle

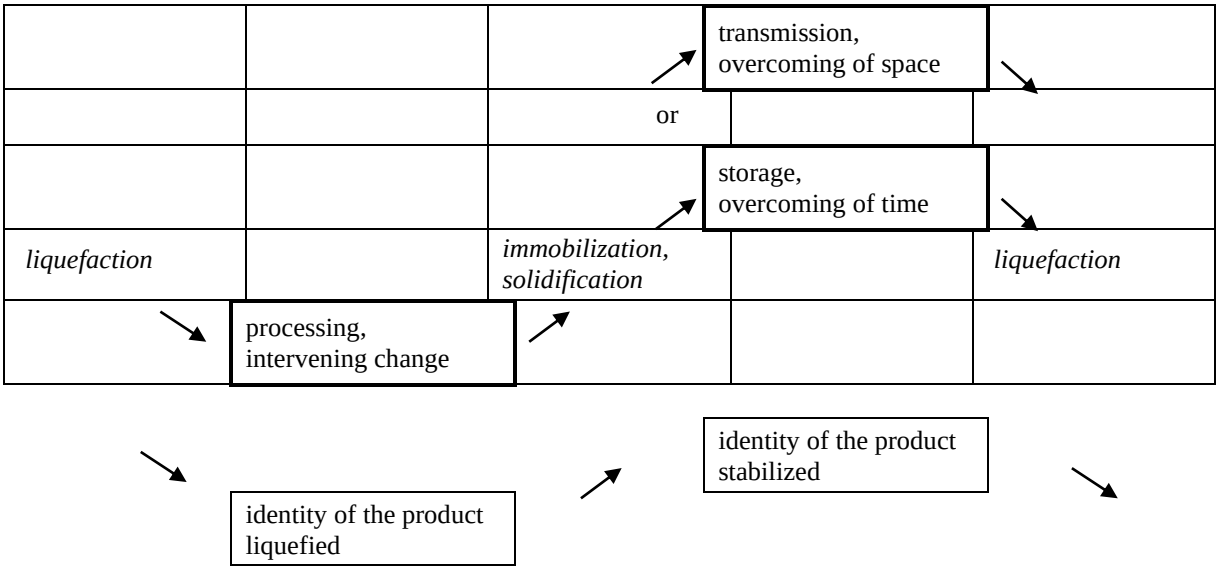
Let us take a closer look. If Kittler is correct in saying that storage/spatialization is necessary in order to detach data from time and (keyword: time axis manipulation) to reorder and process them, then spatialization will obviously represent only an initial step towards processing.

Processing itself is a process that, like transmission, consumes time. I can only process what I have dissolved, i.e. liquified, as a sign complex. Storing, on the other hand, was described above as an immobilization. Everything processual comes to a standstill in the memory/storage; the storage itself is stasis. (Which is why storage was understood here as spatialization, which consumes space, but not time). Characteristic of the storage is its inertia; and that which is stored is waiting for retrieval, for re-liquefaction; which can mean renewed transmission or renewed processing. This signifies that storage and spatialization is necessarily followed by a re-temporalization.

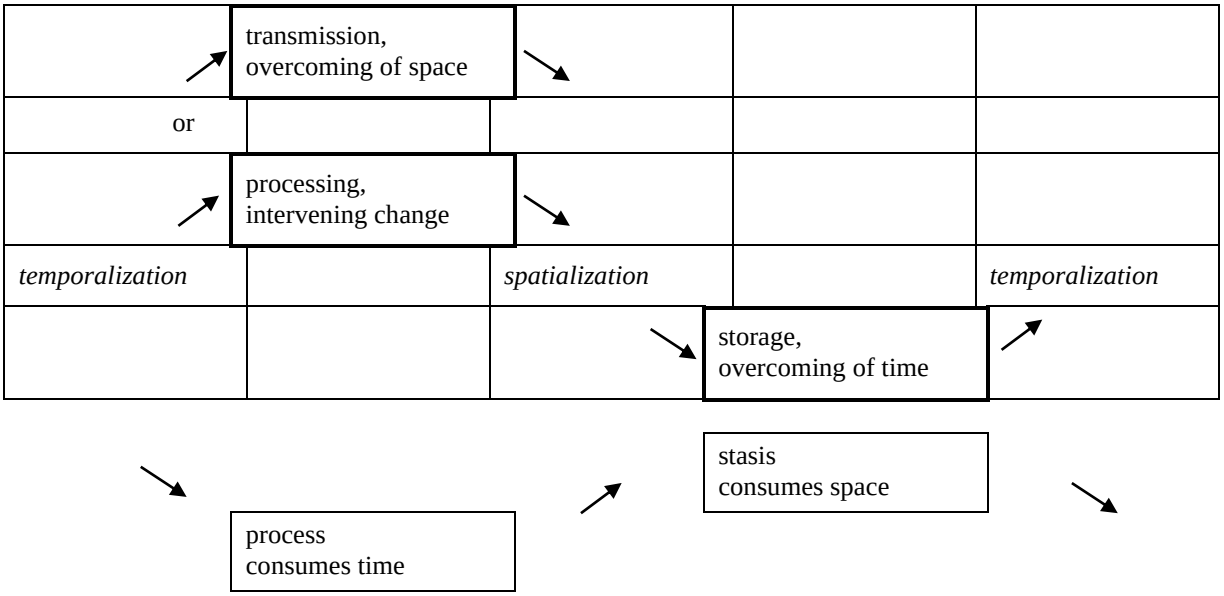
My argument thus returns to the dialectic of liquefaction and immobilization that has been one of the central findings above. What Vief discusses as spatialization and temporalization will have to be applied to the interrelation of change and persistence, process and stasis.

11. Two Interrelations

However, it then becomes apparent that we are not dealing with one, but rather two different polarities. The cycle of liquefaction and immobilization/solidification was described above in this way:



If we now sketch spatialization and temporalization in a comparable way, the scheme looks different:



Obviously, it is not the same. Above all, the transmission has changed over to the opposite camp; it has now moved closer to processing. It is therefore once again a question of perspective, or of the criterion that is used for ordering; and depending on the criterion, the functions of media are reorganized.

It should be noted that spatialization and temporalization, and liquefaction and solidification, are linked in a cycle and are dialectically related to each other. The question of space and time is thus itself processualized. And it becomes clear that the logistics of media are also organized along the axis of time, in a choreography of fixed sequences.

This is what I meant first and foremost when I said at the beginning that Vief's hare provides insight into the structural functioning of media. The concrete media processes are obviously based on *laws* that are necessarily abstract.

12. Spatialization_3: Reversibility, Trial Action

And there is another dimension that – on a similarly general level – is important for an understanding of the media: Kittler/Krämer, but above all Vief, had already used the keyword *reversibility*, as one aspect of spatialization. The core has already been outlined: While temporal processes are *irreversible*, there is after all a possibility of rendering them reversible by using the trick of spatialization. This is precisely what *Time Axis Manipulation* refers to, namely that the time axis becomes manipulable only if it is no longer a time axis but if it has been projected onto a spatial axis, namely a writing system, which can then be rearranged in space at libitum.

Considering this perspective, the notions of time and space, spatialization and temporalization, are by no means equal, as Vief illustrates. Even if an act of a re-temporalization is to follow spatialization (in order, for example, to facilitate product transmission via cable) it will always be the case that the crux of the matter has already occurred – time is no longer the same; it no longer has the same compulsory function than it possessed before; its spell, as it were, is broken by the first incident of spatialization.[23]

[23] Vief, Die Inflation der Igel, l.c., p. 219f.

This is why Vief regards the notion of spatialization as being essentially privileged. For him, it provides the starting point from which his approach changes profoundly towards a more general theory of the symbolic. Based on de Saussure and his theory of values, it claims to explain the workings of money and, as a consequence, also the workings of the digital world.[24]

To be honest, neither the method nor the implementation of Vief's approach has fully convinced me.[25] I would, however, share the core of his argument or, put differently, its basic intuition. In my opinion, 'spatialization' is not concerned with one individual semiotic operation that competes with other semiotic operations but, ultimately, spatialization deals with the *fundamental principles of the symbolic* itself.

At this point the argument of 'spatialization' culminates in a point that I consider particularly important. As I have suggested elsewhere, the realm of the symbolic can be defined as a domain of *trial actions*.[26] Now, trial actions themselves are defined by no less than reversibility. While taking real action will have irreversible consequences, the symbolic creates a space in which actions are systematically decoupled from real-life consequences. In this sense, actions in symbolic space can be *reversed* – the basis to perform temporary, fictional or indeed trial actions within the realm of the symbolic. Consequently, spatialization and reversibility take on a very different quality: *From my point of view, it is reversibility that distinguishes trial action from action, thus separating the realm of the symbolic of the domain of the real world.*

Within media studies, this definition has not gained much support to date;[27] nevertheless, I think it will have to be promoted, because it gives reversibility and spatialization an additional dimension and a decisively new meaning. And support can be found for the thesis itself, because it has been repeatedly advocated by very prominent authors in the wider field of cultural studies.

A first approach towards the symbolic takes us via the notion of *play*. Huizinga, who essentially defines play by separating it from the seriousness of everyday actions, would be the chief proponent of this approach:[28] "Play", Huizinga writes,

> "is distinct from 'ordinary' life both as to locality and duration. This is the third main characteristic of play: its secludedness, its limitedness. […] The arena, the card-table, the magic circle, the temple, the stage, the screen [!], the tennis court, the court of justice, etc., are all in form and function play-grounds, i.e. forbidden spots**,** isolated,

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[24] Ibid., p. 225ff. Vief has been concerned with the context that is sketched here for some time, variations on which occur in many of his texts (cf. e.g. also: Id.: Digitales Geld. In: Rötzer, Florian (ed.): Digitaler Schein. Ästhetik der elektronischen Medien. Frankfurt/M. 1991, pp. 117-146).

[25] The main objection I raise here is that the spatial difference (transmission, hare) is converted far too quickly into the 'pure' difference of Saussurean theory of values and information theory without making the context (including potential inconsistencies) very clear. In addition, I do not share Vief's theory on money, an attempt to describe money, too, in terms of information theory, establishing a closer relation between money and bits – "the bits are purely sign money" – than seems possible to me. (Id.: Die Inflation der Igel, p. 229ff.; also Id.: Digitales Geld…, l.c.).

[26] I made this point for the first time at a conference in 2000 (see: W., H.: How to Do Things with Words, Signs, Machines. On Performativity. Reprinted in the present volume, pp. 125-134).

[27] The main reason seems to be the fact that the definition sketched here collides with the thesis of the *performative* that is currently dominating the field: While the notion of performativity addresses the issue that also symbolic processes do result in actual consequences, now the symbolic is to be characterized by the fact that it is specifically *decoupled* from actual life? (Incidentally, I do not think that the two theses fully contradict each other (Winkler, How to do things with words…, l.c.)). Another reason would surely be the fact that, currently, semiotic approaches are not enjoying much popularity in media studies...

[28] Huizinga, Johan: Homo Ludens. A study of the play element in culture [1938]. Boston: Beacon 1971. Making reference to play may appear to be counterintuitive at first – do media processes not form an *integral part* of the seriousness of our everyday life?

> hedged round, hallowed, within which special rules obtain. All are temporary worlds within the ordinary world, dedicated to the performance of an act apart."[29]

In 1996, Krämer pursues the same idea with regard to Bateson. She generalizes: "Wherever there is play, we tend to act symbolically";[30] In 2005 then – completely in line with the definition that is proposed here – she converges play, reversibility and the symbolic:

> "What is it that can be encountered by a philosophical reflection of play and what can be revealed by it? It is the phenomenon and the notion of reversibility. […] It is the symbolic action, particularly the use of linguistic signs that opens up a world of *reversibility* by distinguishing between a thing and its classification (Saussurean concept); first and foremost, however, by using negation, something that is only possible in language."[31]

Reversibility plays a pivotal role also for Luhmann who, in a famous essay, addresses the notion of action and the temporal structures that are associated with it.[32]

Finally, a third approach concerns the concept of trial action itself. Prominently, this concept is discussed in Freud who describes the process of *thinking* as trial action.[33] Moving onto

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[29] Huizinga, Homo Ludens, l.c., p. 9f. (emphas. H. W.).

[30] Krämer, Sybille: Die Eigensinnigkeit von Medien [1996]. http://www.inf.fu-berlin.de/~ossnkopp/eignsinn.html, last accessed on 2/20/1998 (transl. H.W.).

[31] Krämer, Sybille: Die Welt, ein Spiel? Über die Spielbewegung als Umkehrbarkeit. In: Deutsches Hygiene-Museum (ed.): Spielen. Zwischen Rausch und Regel. Ostfildern-Ruit 2005, pp. 11-19, here: p. 15 (transl. and emphas. H. W.). Krämer continues: "We lead our lives fully aware that our existence is irreversible. Therefore, is the cultural meaning of reversible play worlds in some way related to the existential meaning of the irreversibility of our death? Does the reversibility of life and death as part of play, which is rooted in its repetitive nature, also provide an answer to the fact that our normal everyday lives are practically irreversible? Does this playful reversibility therefore form a cultural counter world to our irreversible existence?" (Ibid., p. 16). It is important to emphasize this point particularly as Krämer, in many of her publications, accentuates the notion of performativity.

[32] L., Niklas: Temporalstrukturen des Handlungssystems [1980]. In: Id.: Soziologische Aufklärung III, Opladen: Westdeutscher Verlag 1981, pp. 126-150. Initially Luhmann discusses the irreversibility of time in relation to the action concept (Ibid., pp. 127ff.) which leads him to the following argument: "It is always possible to take another step if asking the question of *how to have irreversibility at one's disposal*. The actual problem of reversibility/ irreversibility is not primarily contributed to any objective processes that can be either reversed or not reversed. Rather, I wish to address a problem that is immanent in all meaningful structures: that it is possible to return to any meaning that has been left behind in the course of experiencing and taking action by focusing on other meanings; in other words, that it is possible to update them again, as it were, in new presents". […] "What differentiates reversibility and irreversibility [belongs] in the realm of the order performance that they [the action systems] fulfill. This is precisely what is withdrawn – by means of forming structure – from the transience of the moment and is thus made reversible: it endures, and can therefore be changed. In contrast to what the simple opposition of structure and process would therefore entail, it is precisely the forming of structure that will open up any possibilities of change, while the linking of events appears as a process as soon as it becomes irreversible. Structures *serve the purpose of building up reversibility while processes will generate irreversibility.* Therefore, turning common perception on its head, structures are more dynamic than processes." (Ibid., p. 132f. (transl. & 2nd emphas. H.W.)).

[33] "Thinking is an experimental action carried out with small amounts of energy, in the same way as a general shifts small figures about on a map before setting his large bodies of troops in motion." (Freud, Sigmund: New Introductory Lectures on Psychoanalysis [1933]. NY/London: Norton 1965, p. 104 (see also FN 6 on the same page)); or, interestingly, in relation to fantasy and play: "Restraint upon motor discharge (upon action), which then became necessary, was provided by means of the process of thinking, which was developed from the presentation of ideas. Thinking was endowed with characteristics which made it possible for the mental apparatus to tolerate an increased tension of stimulus while the process of discharge was postponed. It is essentially an experimental kind of acting, accompanied by displacement of relatively small quantities of cathexis together with less expenditure (discharge) of them." "With the introduction of the reality principle one species of thought-activity was split off; it was kept free from reality-testing and remained subordinated to the pleasure principle alone. This activity is phantasying, which begins already in children's play [!], and later, continued as day-dreaming, abandons dependence on real objects." (Id.: Formulations on the Two Principles of Mental Function-

Piaget who, adopting the Freudian concept, places childlike play – in the form of practical experimenting/trial action – at the heart of his developmental psychology.[34] We continue with Bateson who also deals comprehensively with the notion of play,[35] and finally Goffman who, based on the limited space of the theater, develops his 'framework' theory of awareness and orientation within everyday life.[36]

Consequently, I argue that reversibility and spatialization require a more in-depth approach. Provided that the symbolic can in fact be determined by the concept of trial action and thus by reversibility, then reversibility no longer remains a characteristic of the written word (as opposed to spoken language) or a technical storage. Rather, it is the decisive characteristic that separates the symbolic from extra-symbolic actions. Thus, it is only through reversibility that the specifically reflexive nature of the symbolic can be achieved.

However, are we not diluting our original question by expanding the argument? Is it not the very focus on material storage from which the thesis proposed by Vief, Krämer, and Kittler gets its momentum?

13. Technical Reproduction

Let us return to the hedgehog and thus to technical reproduction. The beauty of the approach proposed by Vief was that it seemed to be in a position to integrate technical reproduction – an important category that, peculiarly, stood isolated in media studies up to that point – into the overall conceptual construct.

Within the dialectics addressed here, technical reproduction appears to be a special case. How can it make sense to distribute one thousand, ten thousand or one hundred thousand copies in space only to save the time it would take to transmit a particular piece of information? (Ultimately, for the simple reason to ensure immediate access?) In information theory this would be considered a case of redundant storage, in other words, as breaking the law of economy. Thus, this redundancy – like all other redundancies – would tend to be eliminated sooner or later.

In fact, it can be observed in media development that at least the classic solution, namely the filing of material and redundant copies, is becoming less important as an option. To quote an example, let us consider the WWW. At least in principle, the WWW provides any information on a single server where it patiently waits to be accessed by the user (i.e., transmission). And only in exceptional cases will the user also save the downloaded product on his/her own computer (redundantly). In terms of media history, transmission has thus replaced storage. It is almost as if – contrary to the fairy tale – it were *the hare* who has won the race after all.

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ing [1911]. In: Id.: Standard Edition, Vol. 12, London: Hogarth 1973, pp. 210-226, p. 221, 222 (emphas. H.W.)).

[34] Piaget, Jean: The origins of intelligence in children. New York: Internat. Univ. Press 1952.

[35] "What is characteristic of 'play' is that this is a name for contexts in which the constituent acts have a different sort of relevance and organization from that which they would have had in non-play." (Bateson, Gregory: Mind and Nature. A necessary unity. London: Wildwood House 1979, p. 125. Also see: Id.: The Message 'This is Play.' In: Schaffner, Bertram (ed.): Group Processes. (Josiah Macy, Jr., Foundation Proceedings, 1955). New York 1956, pp. 145-242).

[36] "During visits to the Fleishacker Zoo beginning in 1952, Gregory Bateson observed that otters not only fight with each other but also play fighting." "Make-believe: By this term I mean to refer to activity that participants treat as an avowed, ostensible imitation or running through of less transformed activity, this being done with the knowledge that nothing practical will come of the doing." "Presumably muffing or failure can occur both economically and instructively. What one has here are dry runs, trial sessions, run-throughs – in short, 'practicings.'" (Goffman, Erving: Frame Analysis. An essay on the organization of experience. Boston: Northeastern Univ. Press 1974, pp. 40, 48, 59).

In terms of technology, the WWW is based on telegraphy, a system that 'dematerializes' products as it were, thus facilitating transmission at a speed that is close to the speed of light. Provided that, as previously commented by Vief, the server is not based on Jupiter, the resistivity of the transmission within empirical boundaries remains low; so low, in fact, that transmission proves to be the superior solution when compared with other solutions that have been established in media history (i.e. the interaction of technical reproduction and redundant storage that is distributed in space).

Furthermore, it can be argued that technical reproduction certainly does not replace any processes that occur during transmission. Rather, any reproduced copies must be transmitted to different locations in space before they can be accessed in their spatial distribution. Only then will direct (timeless) access also become a feasible advantage. This argument also supports the assumption that, in each incidence, we are dealing with a process chain, namely with the interaction of transmission and storage.

It all culminates in the question of how the relationship between transmission, storage and processing can be ultimately perceived. Is it possible to draw some kind of conclusion from what has been said above?

14. Conclusion

The particular spatialization that constitutes the symbolic is basal, in my opinion. In this point, I agree with Vief: Any other operations that may subsequently occur can only apply to material that has been snatched from the continuum of time and that is therefore available for such an operation. All other operations that are to follow will take place using symbolic material and *within* the realm of the symbolic. In this sense, spatialization wins the crown, because there is no kind of temporalization which has a similar effect. As previously mentioned, the time axis is disempowered – symbolic processes may still be processes (and thus take time); however, this does not compare to the dramatic irreversibility of time that is located outside of the symbolic realm.

Within the realm of the symbolic, temporalization and spatialization appear to be reciprocal processes that are related to one another. Integrated into a cycle, they are dependent on one another, while the cycle itself oscillates between process and stasis, transmission/processing and storage/persistence.

This cycle is the real machine that we need to comprehend. It turns spatialization/temporalization and transmission/storage/processing into dependent concepts whose relationship requires to be clarified *functionally* as well as in relation to one another.

Firstly, and this would be the first act of ordering, the cycle links these concepts to form a sequence; they represent *phases* that are connected in a specified manner and thus follow a predetermined sequence. Spatialization *aims at* stasis while temporalization aims at transmission or processing; considering the overall process, however, each consolidation/liquidation appears to be only a single step.

Secondly, we should reconsider the crosswise imbricated structure. Transmission overcomes space and takes time, while storage overcomes time and takes up space. Space being defined in a dual meaning: On the one hand, the space overcome by transmission is a large, geographical space; on the other hand, the space used by storage (ideally) is small and local. In technical reproduction the two variants seem related: while copies are distributed across the geographical space, the single copy at a particular location functions as a local storage.

Thirdly, we need to address substitution. *Transmission, storage and processing seem able to substitute one another mutually*, even if, at first sight, this substitution appears counter-

intuitive as it initially contradicts their interlinking structure (shown in the phase model). This became clear in the example of the WWW where transmission (the hare) was able to leave behind the hedgehog of technological reproduction. Both space and time are limited resources; depending on which is subject to greater limitations, a technological solution can always switch to the resource that is less constrained.[37] The thesis of substitution is interesting particularly because it contradicts the assumption that the parameters of transmission, storage and processing are to be interpreted as irreducible categories that differ in *quality*, as mechanisms that – with regard to both technology and content follow different rules entirely.

Finally, it should have become clear in the course of this argument that it is impossible to reduce the idea of spatialization to a single and coherent thesis; rather it will be worthwhile to distinguish between its different variants. Thus, I propose that this thesis will become truly meaningful only before the background of systematization as it has been attempted here, in other words, if the conceptual trilogy is traced back to the dialectics of process and stasis. It is only at this point that the crucial structures will be revealed.

I must admit that, initially, this proposal will be able to illuminate only some of the connections that are relevant to the field in question. What is new, however, is the field itself that is opening up before us – surprising indeed since we are dealing with *fundamental concepts of the discipline.*

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[37] Another example from the world of media technology clarifies the point further: The MPEG standard was developed for the transmission of music and moving images on the internet. It would have been too expensive to create the relevant network capacities which would have been enormous. In this case, a compression algorithm provided the solution: The data are highly compressed on the broadcaster's page. This process requires that the computer of the user calculates them back on site and in real time. Thus, the CPU performance has substituted transmission capacity.
Owen illustrates this correlation by showing that also in other cases using storage/buffer can replace CPU performance or transmission capacity. For further clarification, Owen has designed a three-dimensional chart:

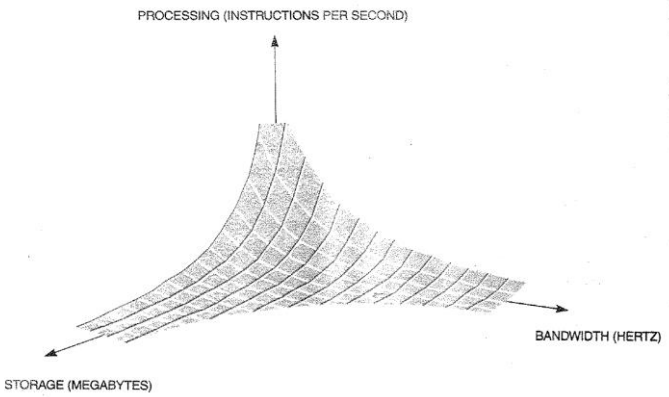

Figure 2.1 Bandwidth-storage-compression tradeoff

The curved chart describes the space in which, dependent on particular circumstances, the optimum technological solution can be found; thus, assuming that the three parameters – transmission, storage and processing – are inter-changeable and replaceable. (Owen, Bruce M.: The Internet Challenge to Television. Cambridge (Mass.)/ London: Harvard UP 2000, p. 24).

5 Repetition,

Material Persistence, and the Remarkable Role of Signs [1]

1. Intro

Phenomena of repetition are omnipresent in the media,[2] and much has been written on the subject; one would hardly think that it is possible to say anything new about this. But – astonishingly as it is – that is the case. I maintain that, overall, we only have a very vague picture of what repetition is actually about; and my text aims to provide a little more clarity here. So, what is the problem?

Repetition – think of rites, conventions, or habit – enables cultures to stabilize over long periods of time; *repetition is a technique of cultural continuity*; this has been argued particularly by the Egyptologist Jan Assmann, and I have cited this in several of my texts.

And Assmann mentions monumentalization as a second technique of cultural continuity, because there is no doubt that cultures also stabilize themselves through material things. Buildings, monuments, objects, hardware, writings, and storage devices can easily outlast long periods of time; they are *stable* thanks to the inertia and persistence of the material.

But how can two such different cultural techniques take on the same function? This is the question that I will focus on in the first part of my text. *What is the relationship between repetition and material persistence?*

Is repetition, more than monumentalization, linked to human practices and actions? And thus, closer to the 'pragmatic turn' that some scholars in media studies advocate? Repetition has been discussed intensively, especially in the context of the performativity debate; if the focus there is primarily on the openness of processes, i.e. the possibility of *change* – how can repetition be a technique of cultural stabilization then?

More generally, what is the relationship between material persistence, repetition, and change? Cultural stability and change? Or finally, even more generally: What is the relationship between

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[1] Translation of the German text: Winkler, Hartmut: Über Wiederholung, materielle Beharrung und die besondere Rolle der Zeichen – Baustein für eine Semiotik 2.0. Web-publication 2023: https://homepages.uni-paderborn.de/winkler/Winkler--Wiederholung.pdf; *first draft translation.*

[2] The printing press is a technology of repetition, as are photography, film, radio, television, computers, and the Internet; Benjamin's 'mechanical reproducibility' underlies almost all contemporary media. If we go back further in history, the phenomena of repetition include rituals that are repeated in certain rhythms – Christmas Eve, for example; series and seriality are based on repetition; genres, aesthetic forms and conventions are formed in repetition processes; rules, standards, programs and protocols force practices into repetition cycles; algorithms operate with loops and recursion.

persistence/repetition and the axis of *time*? I think we should at least have a rough idea of all this, to be able to deal adequately with empirical repetition processes within the media.

The actual yield of my consideration, however, will only become clear in the second part of my text: The reflections on repetition will lead me onto the terrain of *semiotics* and to one of the most difficult questions that arise in the field of media: the question of what – for God's sake – is the role of 'signs.'

And here, I maintain, my text actually has a discovery to offer. Within semiotics, both repetition and material persistence are discussed as well; repetition in the context of sign practices (the use of signs), material persistence regarding the material hardness of signifiers. But in semiotics, too, it is unclear how their relationship should be conceived. This is precarious for media studies because media studies – of course – always must deal with both; and a meaningful concept of media, I think, can only be grasped if it is possible to relate the material signifiers and the practical handling of them – the media practices –, and to show the cultural rules that connect them.

The text follows on from the semiotic considerations I made in my book 'Aehnlichkeit' [Similarity][3] and it will elaborate some points more clearly than was possible there. However, the text requires some patience because, as I said, the actual argument will only become clear in section 23 (from p. 59) or 30 (from p. 64). I will begin with material persistence.

I. Material Persistence

2. Things

We attribute the natural property of persistence to certain things: stones, mountains, buildings, things, objects. We only call a 'thing' what is still there with some certainty when we wake up in the morning. Other things are meant to endure (e.g. institutions), still others must obviously be cared for in order for them to endure (this applies to traditions, for example); physical life can only be maintained through work...

We would associate the persistence of things with *space* rather than time. Everything that is material takes up space; and we would probably think that the attachment to materiality and space alone provides stability in time.

Storage media, for example, exist exclusively in material form; while it has been possible to transfer and process media content "immaterially,"[4] storage devices remain bound to the three-dimensional, extended world of things. Storage seeks an alliance with the inertia of matter.[5]

And even more generally: without materially stable things in our environment, we would lose all orientation; so, if the praxeological approaches of media studies bring all the questions of

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[3] W., H.: Ähnlichkeit [Similarity]. Berlin: Kadmos 2021; the book is in German, but I translated six chapters: https://homepages.uni-paderborn.de/winkler/Winkler--Similarity.pdf.

[4] Doubts about the thesis of 'immateriality' are more than appropriate and, to quote Flusser: "This essay aspires to clear away the distorted concept of the 'immaterial.'" (Flusser, Vilem: Form and Material [1991]. In: Id.: The Shape of Things. London: Reaktion Books 2012, pp. 22-29, here: p. 22).

[5] See: W., H.: Prozessieren. Die dritte, vernachlässigte Medienfunktion [Processing – The third and neglected media function]. Paderborn: Fink 2015, pp. 166, 176, https://homepages.uni-paderborn.de/winkler/Winkler--Prozessieren.pdf.

the discipline down to practices or processes, this is certainly counter-intuitive. *"As its correlate, the concept of change demands that of persistence."*[6]

3. Erosion/Entropy

And a certain degree of change is always already contained in all ideas of stability. So, it is certain that time also passes on mountains; and of course, change also occurs on rocks/mountains, e.g. through erosion. The only difference is that the process is much slower, and so slow that we perceive it – in most frames of reference – as stasis. And even storage media only have a certain period of time within which they are reliable; quite in tension with their actual purpose of preserving what is stored.

So, is it all about different speeds of change? Processes with different dynamics? Or about different perspectives? In the same way that geology and paleontology only register very long-term changes? Is it about scale? A stone has come loose and rolled into the valley, but the mountain is still there? The building is gone, but the city is still there? Or is it about interests, objectives, or values? Do we want, desire and welcome change in certain cases and stability in others?

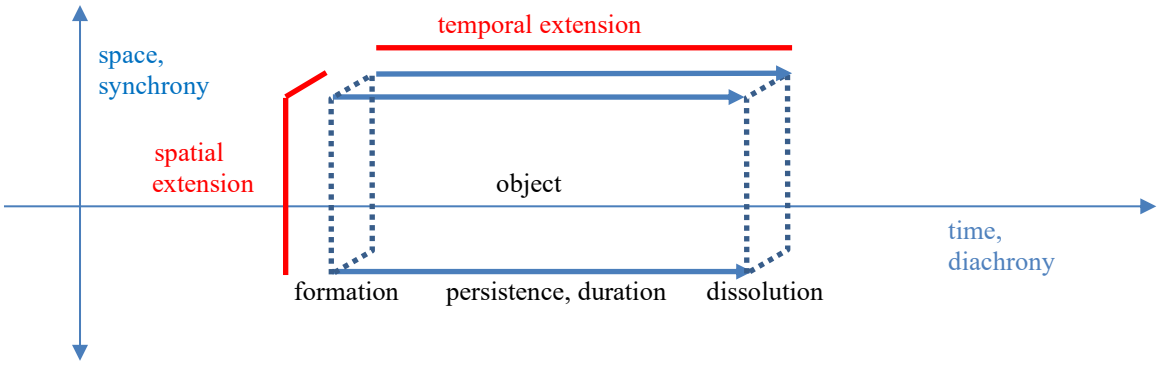
4. Differences in Materials

Why is it hard materials, mountains, and stones that we associate with duration? Limestone is a former seabed, which means it is the product of life, or at least matter that has passed through organisms in many cycles. However, this does not apply to granite. And limestone, too, is not current life, but former life, and is now sunken and dead.

But as I said: Erosion also occurs on stones. What is the relationship between entropy and erosion? Is erosion the epitome of entropy?

5. Extension

Schematized, one can say that all things have a spatial and a temporal extension.[7] and connected with this: Things come into being in order to persist for a while and then pass away again.

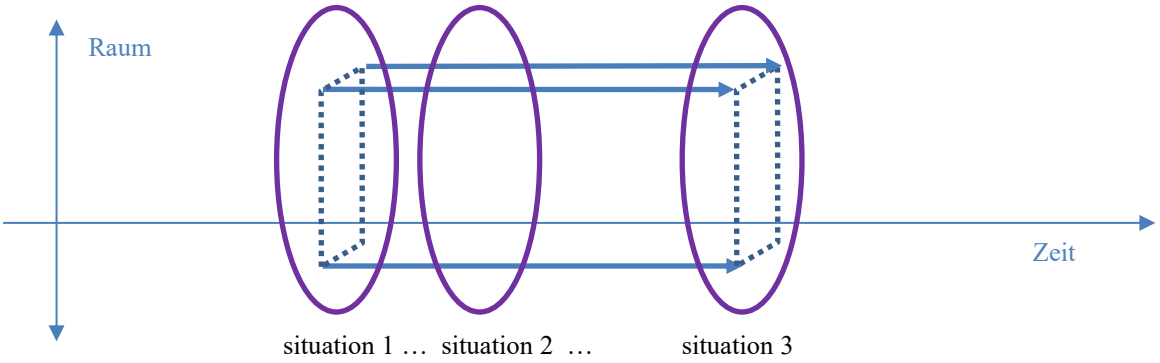


[6] Schischkoff, Georgi: Philosophisches Wörterbuch der Philosophie [Veränderung]. Stuttgart: Kröner 1982, p. 723 (transl. and emphas. H. W.).

[7] I take this idea from a book on fashion that describes fashion – very plausibly – as an oscillation of stabilization and destabilization or dissolution processes (Kamneva-Wortmann, Anna: Modenetze – Modeschwärme. Kleidungskulturen ohne zentrale Akteure. Bielefeld: Transcript 2023, pp. 48ff.).

The argument has the advantage of treating space and time in the same way; space is understood as extension, time as space of time, as duration. And changes in quantities or density can also be grasped reasonably well with a view to extension.[8]

However, something else is decisive for the continuation of my argument. Material permanence and temporal extension mean that the material thing, object, or element (stable and largely 'identical' with itself) *is passed through different situations*.

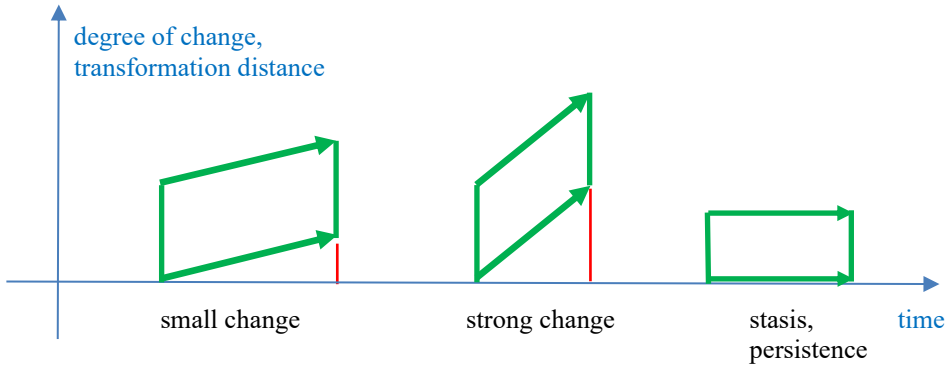


And certainly, attention should not be focused exclusively on extension, because there are also types of stability or change that have little or nothing to do with spatial or temporal extension, but rather concern qualities.

II. Transformation, Change

6. Measure of Change

If material persistence and repetition are mechanisms of stabilization, then this is contrasted with *change*. And if we want to include qualitative changes as well as extension, it seems sensible to set aside the dimension of space for the time being. It would be important to be able to distinguish between different types and measures of change. For this purpose, the concept of 'transformation distance' can be adopted from geometry and computer science.[9] In cases of strong change the transformation distance is large, in cases of small change it is small. Stasis or stagnation would be a special case with a transformation distance of "zero."

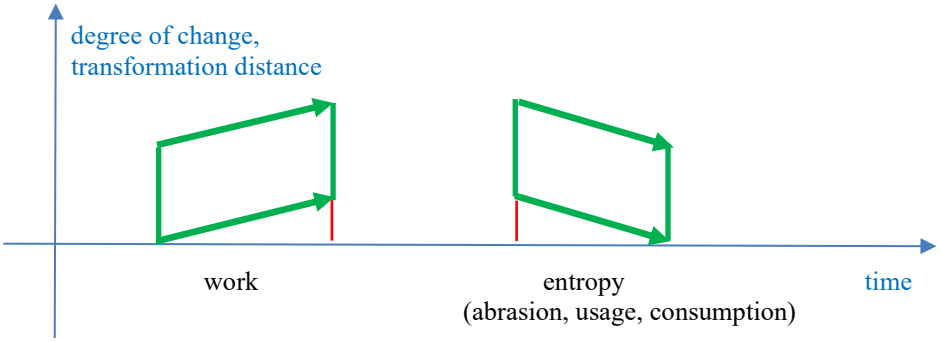


[8] It is important for me to note that when I speak of extension here, I am referring to the spatio-temporal extension of a single object; in other contexts, it has also been understood as the distribution/dissemination of a larger number of objects in space or time...

[9] I also owe this suggestion to Kamneva-Wortmann, Modenetze, op. cit. pp. 188ff.

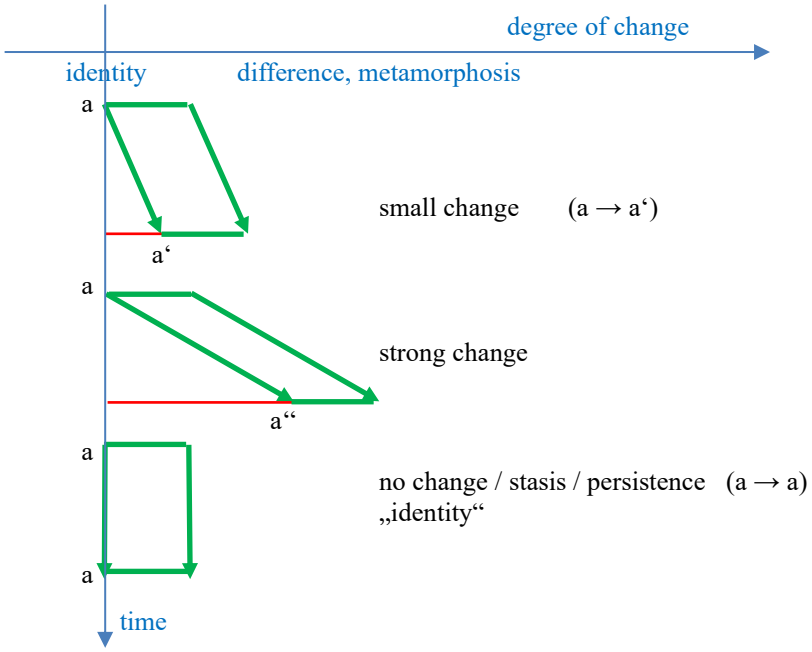
7. Work

The graphic suggests that change is associated with effort. Change has an economic side. And depending on the direction of the vector, a distinction could be made as to whether the change requires effort ('work') or whether it takes place almost automatically (entropy):



8. Special Case: Stasis

In the concrete, however, the graphic is not very intuitive. It is more intuitive to imagine that as soon as you let go of things, they exist quasi-autonomously in time. If you place the time axis vertically, the illustration appears somewhat more plausible: the stabilized object (identical to itself) then falls through time like a stone.



9. Identity and Difference

The keyword 'identity' has just been mentioned. What I call stillness or stasis here is a pragmatic variant of 'identity.' Change, conversely, is associated with the counter-concept of difference.

10. In the Background: Plato and Heraclitus

In the history of philosophy, both perspectives were already generalized, radicalized, and related to metaphysical questions in antiquity: While Heraclitus said: Panta rei, everything changes, everything is in motion, Plato's sphere of ideas stands for an everlasting stability: In the world we live in, everything may change, in the sphere of ideas nothing changes; ontology wants to name what is stable, what remains.

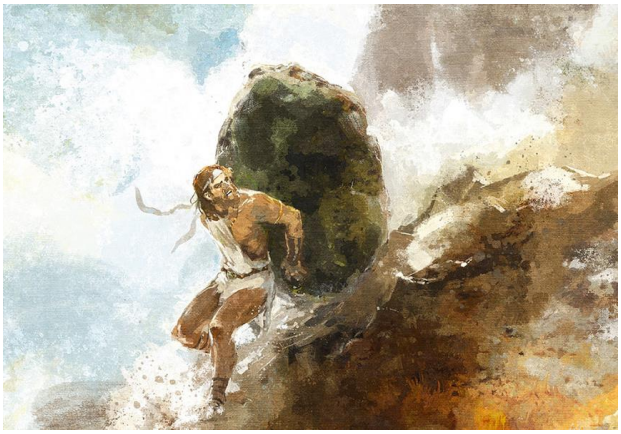
But I am – of course – not concerned with metaphysics, but with the cultural techniques that ensure stability or change. If time is associated with change, then stasis would be, as I said, a special case. The negation of time, so to speak; or a counterforce that opposes time, the attempt to actively prevent time as change.

This leads to the question of what is primary: change or stasis; or which forces act in which direction.

11. Work_2

The first position here would be the aforementioned work. Every idea of work assumes that the inertia of things is primary, and that only work (effort) overcomes this inertia.

And work is bound to repetition, work must constantly renew itself, precisely because it resists entropy. Is that also a kind of duration? Sisyphus? Tragic duration?



12. Living and Dead

And the argument of inertia corresponds to a traditional rhetoric of living and dead: Labor, for example, is understood by Marx as 'living labor,' which he contrasts with objects being 'dead things' (and capital as 'dead labor').[10] The transition itself is understood as mortification, and writing has often been understood as mortified speech.

It is interesting that life and work are highly correlated here. And conversely, this corresponds to the idea of entropy: Everything living supports itself (through effort/work) from the ground for a while, only to eventually – inevitably – fall back there. If we take this seriously, death would always be the winner; the vertical line in the diagram would be self-evident; the actual duration would be death.

[10] Marx, Karl; Engels, Friedrich: Capital. A Critique of Political Economy, Vol. 1 [1867]. NY: Kerr 1906, p. 217.

13. Counter-Position: Does Immobilization also Involve Work?

The counter-position arises when one realizes that even stabilization often requires activity, i.e. work. Thus, writing is a technique for actively depositing something in order to preserve it; musealization, preservation and care are (conservative) activities...

These meet the resistance of the material again, e.g. when a form is imposed on the material in the process of storage; and entropy could also be understood as a negative 'work' that abrades the material and form of what has once been stored. In any case, the vector in my graphic would not fall into the vertical on its own but would be pushed into the vertical.

14. Intermediate Total

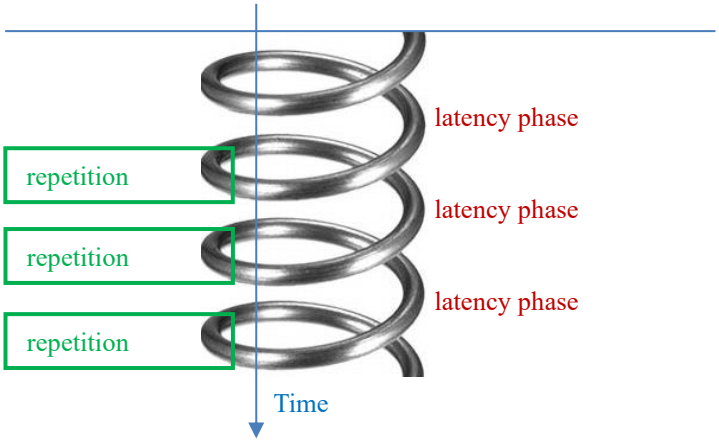
So, what is primary: Change or stasis? Is Heraclitus – ultimately – right, or Plato? How does change come about, how does stasis occur? Does the question I started with not always imply that movement and change are primary? Or in economic terms: What happens by itself and what requires the use of labor/power?

And finally: What would a real symmetry look like in which stasis and change would actually have equal weight? Does such a symmetry contradict my initial question, which relates both change and stasis to the axis of time? Is this the point where space comes into play again?

III. Repetition and Similarity

15. Repetition

Let us now return to the actual topic, repetition. At first glance, Repetition seems to function in a fundamentally different way than monumentalization: Where the monument materially persists and, whatever happens in parallel, is *continuously present*, what is repeated only returns after a certain period of time. And that means it is *just not there* in the phase between the repetitions. Monumentalization, one could say in short, means continuity, repetition implies interruption.

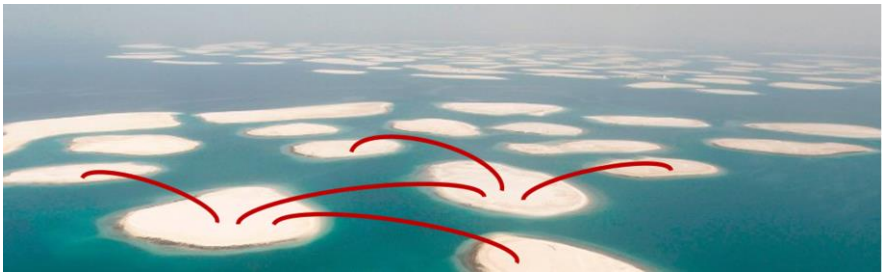


The second difference is related to this: In the case of monumentalization, it is always a matter of a single object that survives time (identical with itself). For repetition, however, this does not apply at all; the individual repetitions may be *similar* to each other; and they must be similar in order for it to be a repetition at all. What is undeniable, however, and Derrida, in particular, has always insisted on this, is that repetition links *two* objects or events, objects that are distinct, i.e. by no means 'identical.' So, when we speak of 'identical' repetition, this is a pragmatic abbreviation or misses the point.

16. Similarity

And further: If repetition connects ‘similar’ and not identical objects or events with each other – what does ‘similar’ mean? Especially in contrast to identity?

Similarity, I think, exists in two forms: as a succession along the axis of time (as repetition), and as a juxtaposition of similar things in space. And what has just been said about repetition also applies to this second type of similarity: Here, too, it is not about one thing, but always about several things; and these similar things are – like islands in the sea – separated from one another by heterogeneous material (by material that is not similar to them).[11] Similarity has the property that it unites things across the abyss of this separation.



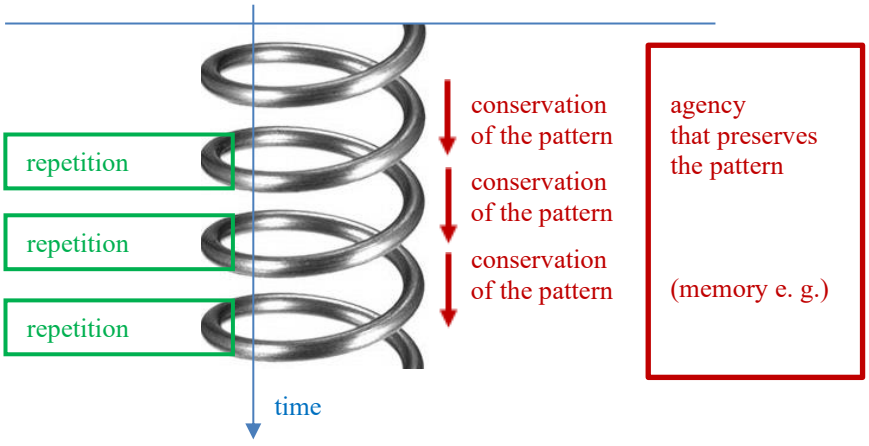
12

IV. The Agency that Preserves the Pattern

17. Continuity?

But how can this be? Why is repetition a cultural technique of cultural continuity; how can repetition create continuity if it is discontinuous?

The first answer is relatively simple; for repetition to take place, there must be an agency that preserves what is to be repeated until the next repetition. In the case of rituals – Christmas, for example – it is human memory that performs this function; in the time between repetitions, the memory must maintain the pattern that the ritual follows.



And as fragile as human memory may be, it undoubtedly functions in a ‘monumental’ way between repetitions. Nevertheless, memory is certainly a special ‘storage device,’ on the one hand because it is fragile, and on the other because, although materialized, it is not intersubjectively accessible like other monuments in external space.

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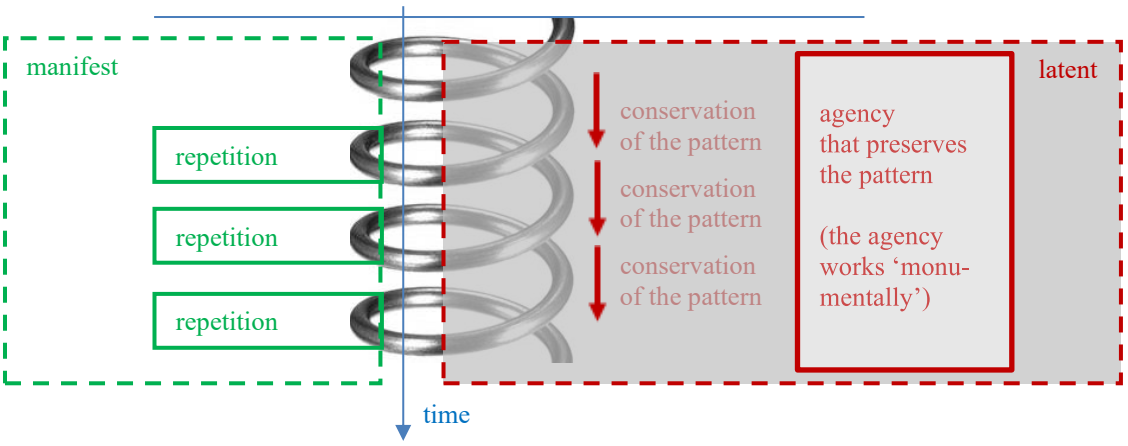
[11] I have elaborated on this connection in my book Ähnlichkeit, op. cit., pp. 63-80.

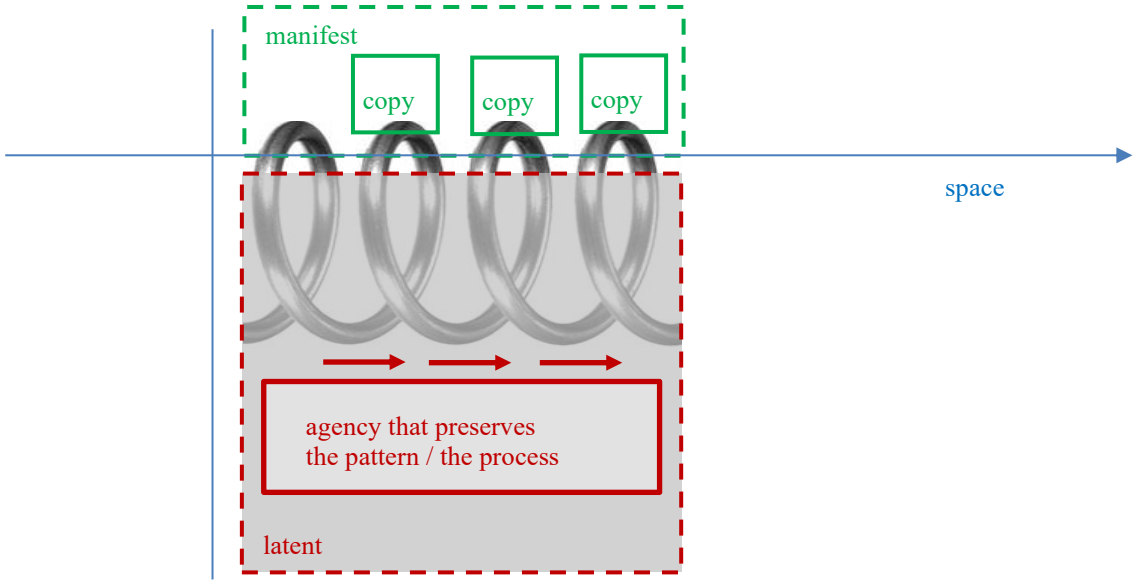
[12] The graphic is also taken from my book (ibid., p. 69).

18. Manifest and Latent

It is interesting to note that on the surface of the discourse, only the repetition itself is initially observable; the agency that maintains the pattern from repetition to repetition remains *latent* in many cases – even though it is obviously functionally necessary.



And for the similarity, the juxtaposition in space, e.g. the copy, the same applies:



Here it is initially only the copies that are visible on the surface of the discourses; however, these are connected to each other in a subliminal way – precisely through the agency or the process of reproduction.

19. What Agencies are There?

But is the agency really hidden in all cases? This is true for memory, which I mentioned as an example; human memory is considered notoriously inaccessible/opaque; and even more so for collective memory, which – my example was Christmas – is distributed among a large number of individual memories.

However, this does not apply to other such agencies. In the case of book printing, for example, everyone knows that there is a publisher in the background; and similarly in the case of analog photography, where all copies go back to a common negative. And again, similar to television that transmits a signal from a central location which the distributed receivers then reproduce

simultaneously. In all these cases, it is clear that a central authority in the background (an institution supported by certain media technologies) ensures that the copies or repetitions are 'identical.'

(Even in these cases, however, the question of the 'agency' does not seem pointless: The step from the visible media product to the institution/organization behind it and to media technology, i.e. from content to medium, is exactly the one that – "the medium is the message" – constitutes the field of media studies).

Institutions would therefore be a very visible type of such 'agency.' With regard to repetition, however, this case is rather less interesting: The institution in the background is the controller and, unlike repetition itself, it functions continuously and monumentally. Here, material persistence has won.

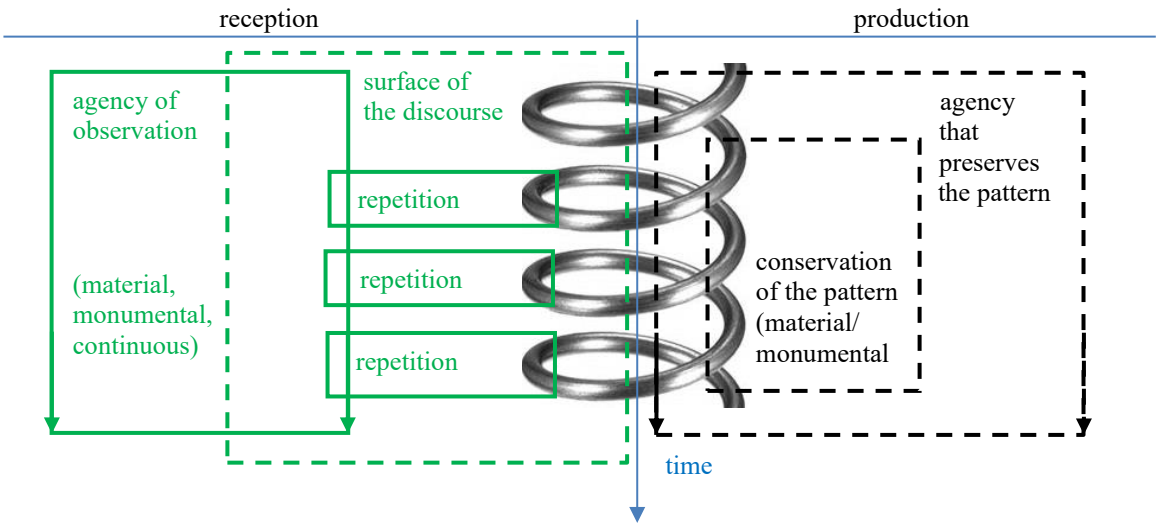
20. Latency

In other cases, however, the agency is, as I said, inaccessible/latent; and this alternative seems much more interesting to me: At times only the instantiations, only the repetitions are accessible. A good example is conventional behavior. Here, only the behavior, only the individual incidents can be observed. Recognizing a series of repetitions in these incidents is already an achievement of the observation itself. And only the observer can – in a second step – infer from the repetitions that a convention obviously exists behind the repetitions. And what is more: In many cases it will remain doubtful/disputed whether the convention in question is existing behind the repetitions at all.

A second example would be scientific research, for example in biology, which collects and systematically compares specimens in order to deduce certain rules, e.g. of heredity, from the specimens. There may be an authority – nature and its 'laws' – in the background, but it is not directly accessible.

21. Observation

And immediately things become even more complicated: With observation, another, a third agency comes into play. And this agency, the observer, once again functions materially/monumentally. If we include the observer, it seems necessary to change the scheme once again:



22. Intermediate Total

In any case, it seems sensible to distinguish – systematically and always – between two spheres, each of which follows a different logic: Observable repetition itself is a phenomenon on the surface of discourse. It is discontinuous. At the same time, however, repetition is functionally dependent on an instance that preserves the pattern and/or observes the repetition. And this instance functions according to the monument in a material-continuous way.

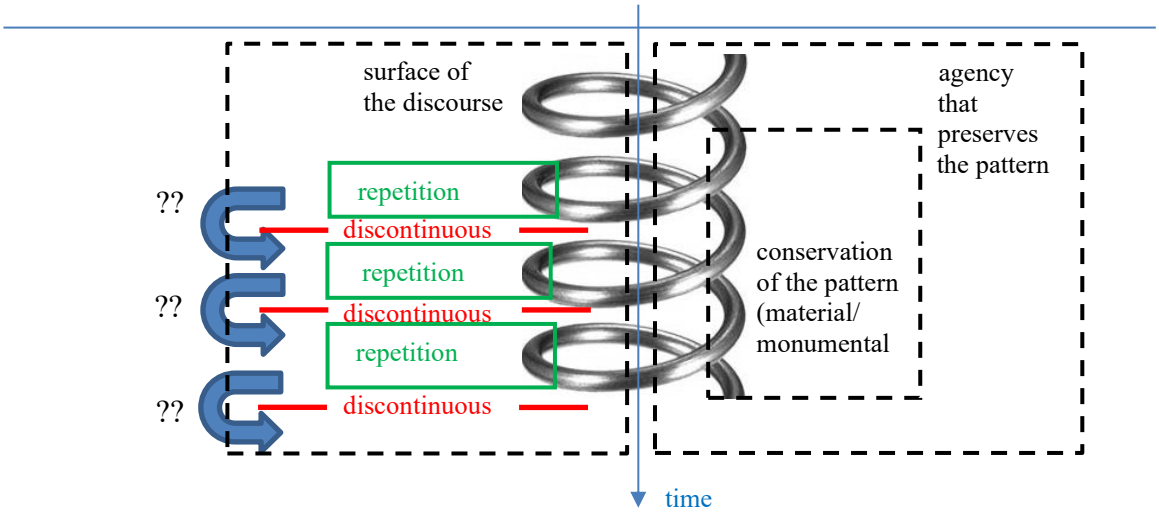
And there seem to be different such agencies: Habits and rituals function differently from institutions, technical implementations, standards, programs, or procedures. All are differently visible, differently firmly institutionalized, and differently 'monumental.' What they all have in common is that they do their work in the background.

V. Characteristics

23. What Bridges the Abyss? What is Passed from Repetition to Repetition?

My question was how repetition, if it is discontinuous, can create continuity; and first I referred to the instances that preserve the patterns. But the problem is by no means solved, for one can also regard the repetition itself, i.e. what appears on the surface of the discourse, in order to then ask *what* is actually repeated, what the content of the repetition is:

In the case of the monument, it is the material object itself that outlasts time and that, identical with itself, is 'handed over' from situation to situation. In the case of repetition, however, this is obviously different. So, if it is not the material object – what then connects the different instantiations? What is passed from situation to situation?



The key, I think, lies in the concept of similarity. Repetition, as I said, is a case not of identity but of similarity; when something is repeated, the repetitions are similar to each other.

And when things resemble each other, they are neither completely identical nor completely different; there will always be both similarities and differences. And this means an important leap, because similarity forces us to think about these characteristics (similarities and differences).

Similarity, one must conclude, discards the things themselves and splits them into characteristics or features.

So, if something is ‘passed through’ from situation to situation in the process of repetition, then it is not the material objects themselves, but certain of their characteristics, namely those that are common to these situations. And the same applies to the juxtaposition of similar things in space. Since here too we are not dealing with one, but with several material objects, these are also only connected by the characteristics that they have in common.

This is probably the most important difference that separates material persistence and repetition. A table may provide an overview:

1. time				
	1.1	monumentalization, persistence, duration, identity (things, storage, monuments) [temporal extension of the single object]	same material object, and characteristics/form are constant	
	1.2	repetition [succession of objects or events]	different objects	some of the characteristics are constant
2. space				
	2.1	identity [spacial extension of the single object]	same material object, and characteristics/form are constant	
	2.2	similarity [juxtaposition in space]	different objects	some of the characteristics are constant

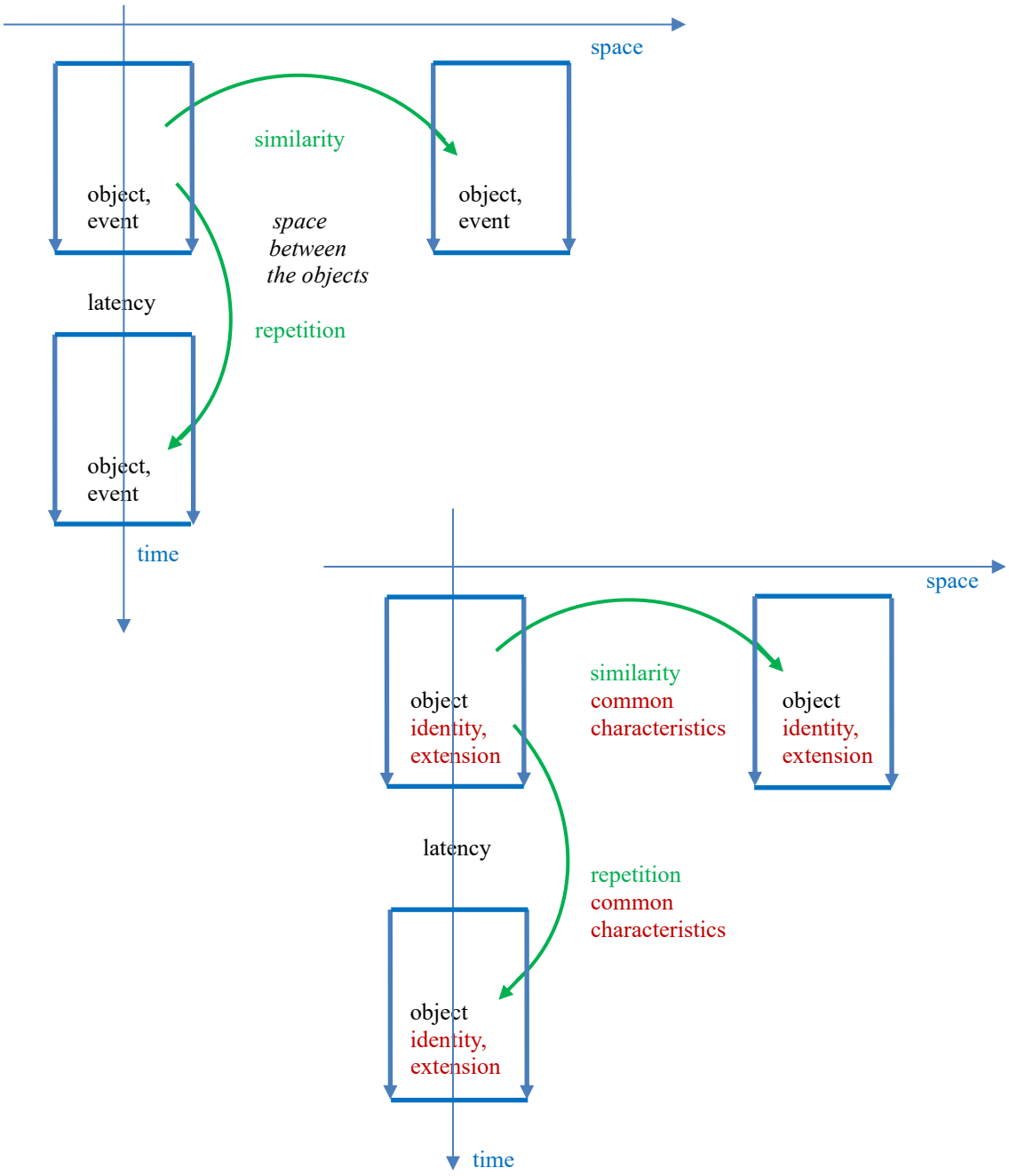
If we include repetition, then what we understand by stability or duration changes. Either the material object stands for duration; the object appears ‘glued’ with its characteristics; here philosophy speaks of ‘hylemorphism.’ This would be the case of things, memories, monuments. Or – in the case of repetition and similarity: – the objects change and only the characteristics remain constant.

And what is more: While in the first case it is precisely the materiality, the thingness itself, that ensures the ‘identity,’ the constancy of the characteristics, in the second case this material basis seems to be missing. But how can this be? And what does this mean for the initial question of stability and change?

24. Two Spaces

In any case, a distinction must be made between two spaces, the internal space of the individual object and the space between the objects. The internal space is about material identity. The persistence of the object is its temporal extension, and its consumption of space is its spatial extension.

In the space between the objects, on the other hand, attention must be focused on the characteristics: On the time axis it is about repetition, in the spatial juxtaposition about similarity; in both cases the objects are only related to each other on the level of the characteristics.



Is it simply a matter of two levels of observation? Or does it depend on what we call an 'object'?

25. Characteristics, Material, and Form

And even more generally: What is the status of 'characteristics' – in relation to my initial question about the relationship between stasis and change? And, if I spoke above of form and change of form: What is the status of 'form'?

Provisionally, I would like to call the totality of all those characteristics that are kept constant with a changing object the 'form.'

At this point, my consideration touches on the venerable questions that have been discussed in philosophy as the relationship between ὕλη and μορφή (matter and form).[13] Here too, however, I would like to avoid philosophical questions. I am more interested in practical matters: Is it the material that preserves the form, or do we measure by the preservation of the form that something has been preserved and what has been preserved?

These questions concern both the world of things and the media; and centrally also the concept of 'information;' Flusser, for example, drafts a concept of form and 'information' that effortlessly encompasses both spheres:

> "[D]esign is one of the methods of giving form to matter […]. What is at issue is the concept of in-formation. In other words, imposing forms on materials. This has been apparent since the Industrial Revolution. A steel tool in a press is a form, and it in-forms the flood of glass or plastic flowing past it into bottles or ashtrays."[14]

I will come back to the parallel between media mechanisms and industrial production.

26. Intermediate Total: Monumentalization and Similarity/Repetition

Let us note that there are obviously two types of stabilization, of which only the first, monumentalization, binds the constancy of the characteristics (the form) to the materiality of the objects.

The second, stabilization through repetition and/or similarity, however, and this connects my reflections to everyday questions of media studies, is also quite familiar as a storage technique: the book universe, for example, relies on redundancy; on the safeguarding of content through the multiplicity of spatially distributed copies, i.e. multiple storage at different locations. And more recently – and quite amazingly – *blockchain* has also been using the same technology. Here, too, the integrity of the data is guaranteed by redundant storage at several geographically distributed locations.

27. Change in Characteristics

I would now like to return to change and transformation, which form the antithesis of persistence. The first, simplest case is that the change occurs in a single object. The best way to determine that something has changed, i.e. that there is a difference between before and after, is the restriction of perspective to a single object.

And now it is noticeable that the change concerns exactly those 'characteristics' that were just mentioned. If the object changes qualitatively, this means that its properties or characteristics change. In media theory, this is linked to the concept of *processing*. 'Processing' is the term used to describe both the development of a film in a laboratory and the calculation of statistics by a computer, as well as, outside the media, industrial processes such as the production of apple juice in a factory.

I have suggested that processing should be understood as 'change through intervention.'[15] And 'intervention' means exactly this: That the object remains constant – in whatever way – while its properties or characteristics change.

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[13] Ritter, Joachim (Hg.): Historisches Wörterbuch der Philosophie [Form und Materie (Stoff)], Bd. 2, Darmstadt: WBG 1972, pp. 977-1030.

[14] Flusser, Form and material, op. cit., p. 22, 28.

[15] Winkler, Prozessieren, op. cit., pp. 17ff.

28. Three Types

This results in a surprising order that links seemingly disparate questions – questions that are discussed completely separately in media studies – with one another: If (1.) the material object and its characteristics remain constant, it is a matter of storage, of material persistence. If (2.) the object remains constant and the characteristics change, it is a matter of processing; if (3.) the object changes and certain characteristics remain the same, we are in the field of similarity and repetition.

(I exclude the case in which both the object and the characteristics change; it may stand for the unordered surface of the heterogeneous, i.e. for the 'sea' that separates the 'islands' of similarity in my diagram above).

Provisionally, I would also like to summarize this in a table:

		characteristics	
		constant	change
mat. object	constant	storage, material persistence	processing, change through intervention
	changes	repetition (time), similarity (space)	(chaos, noise, the 'sea' between the islands)

29. Media History

So, it does indeed seem to make a difference whether the persistence or the change concerns the object itself or its characteristics. And that my reasoning is not simply idle can again be shown by media-historical examples.

The letter, for example, is 'monumental' even though it is sent, i.e. changes its location, because it is its concrete materiality that ensures the constancy of its characteristics (its form). This is different in the case of telegrams and e-mails. The telegram has detached itself from any material body; it consists of a certain sequence of characters that is recoded several times along the way and changes its respective carrier.[16] What is transmitted is only a bundle of characteristics, only 'form.'[17]

A second media-historical example, already discussed in relation to book printing, is provided by mechanical reproduction and the copy. Benjamin's famous text reflects the shock of the emergence of reproduction media such as film and radio, which no longer depended on a conventional material original. Mechanical reproduction and copying are an extreme case of intentional similarity as a spatial juxtaposition: All copies should be as 'identical' as possible in terms of their characteristics/form,[18] but they do not share a 'body'...

Obviously, the materiality of objects has lost the privilege of being the guardian and preserver of form. But what does this mean? In particular for the relationship between materiality and characteristics/form? If, with telegraphy, the media function of transmission has made the leap

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[16] See: Hickethier, Knut: Einführung in die Medienwissenschaft. Stuttgart/Weimar: Metzler 2003, pp. 77f.

[17] The thesis of 'immaterialization,' as I said, captures this property. However, the thesis must remain completely helpless as long as it cannot describe what form is, what features are, or even 'signs'...

[18] ...'identical' again limited to the pragmatic sense of the word...

into ‘immateriality,’ while that of storage is still chained to material objects because memories are necessarily material storage devices – why is this so? And what does this say about my initial question about ‘persistence’?

VI. A Grin without a Cat

> “‘Well! I’ve often seen a cat without a grin,’ thought Alice; ‘but a grin without a cat! It’s the most curious thing I ever saw in all my life!’” (Lewis Carroll, Alice in Wonderland[19])

30. Signs

In the course of my argumentation, attention has shifted from the objects to their characteristics. In the case of repetition and similarity, they are the ones who bridge the abyss between the various individual objects; they create their own kind of continuity; the characteristics have proved to be as stable as the material things/objects.

And there is an astonishing consequence to be drawn from this: *Quite obviously* – and this is the main result of my consideration – *it is possible to detach the characteristics from the things/objects*.

And not only analytically, because without recourse to the characteristics the functioning of repetition and similarity cannot be explained, but also in concrete terms: Characteristics and form have (like the grin of Carroll’s cat?) emancipated themselves from the objects and begun a life of their own. But how can this be if, unlike the objects, they have no ‘body’?

And now I come to the decisive point at which my reflection shifts to the terrain of *semiotics*:

My assertion is that media and signs generally have the property of separating characteristics/form from material things.

I see that this requires an explanation. Media do not work with the three-dimensional things themselves, but with symbolic material, with schemes, signs, or representations.[20] Schemata, signs – or words, if we choose language as an example – do not denote a single thing, but always groups or classes of things. They are more abstract than the things they describe. And the basis is again similarity and repetition: Schemata are formed in repetition; and what resembles/repeats itself and shares certain characteristics is summarized in a schema, a group or class.

If signs have ‘meaning,’ this means that they organize a certain section of our knowledge of the world. The word ‘garden chair,’ for example, is associated with a whole bundle of characteristics within the language community; to know the meaning of a word, to understand the word, means to know these characteristics. Even if language users seldom realize this, language has made things obsolete and replaced them with the knowledge of these bundles of characteristics. Media and signs abstract and schematize; they administer exactly (and nothing other than) the detached characteristics – the form. *Signs*, one could say, *distill from things what form is in them.*[21]

It can be said that signs parasitize on the infinite stream of practices and discourses: The special feature and the special achievement of signs is that they are able to observe and record repeti-

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[19] Carroll, Lewis: Alice in Wonderland [1865]. London: Harper 2000, p. 77.

[20] Our perceptual apparatus already forms schemata and is dependent on schemata for its functioning; I have described the connection between perception, schema formation and the formation of signs in my book ‘Ähnlichkeit’ (op. cit., pp. 41-58, 133-194, 273-290).

[21] See: Winkler, Ähnlichkeit, op. cit., p. 257, pp. 241-266.

tion; Characteristics are extracted from an infinite number of repetitions, condensed into bundles and – as a schema – made permanent.

For the context pursued here, this means that the leap from things to signs, that every use of signs, means that the characteristics emancipate themselves. The decisive factor is this detachability itself.

VII. Rematerialization

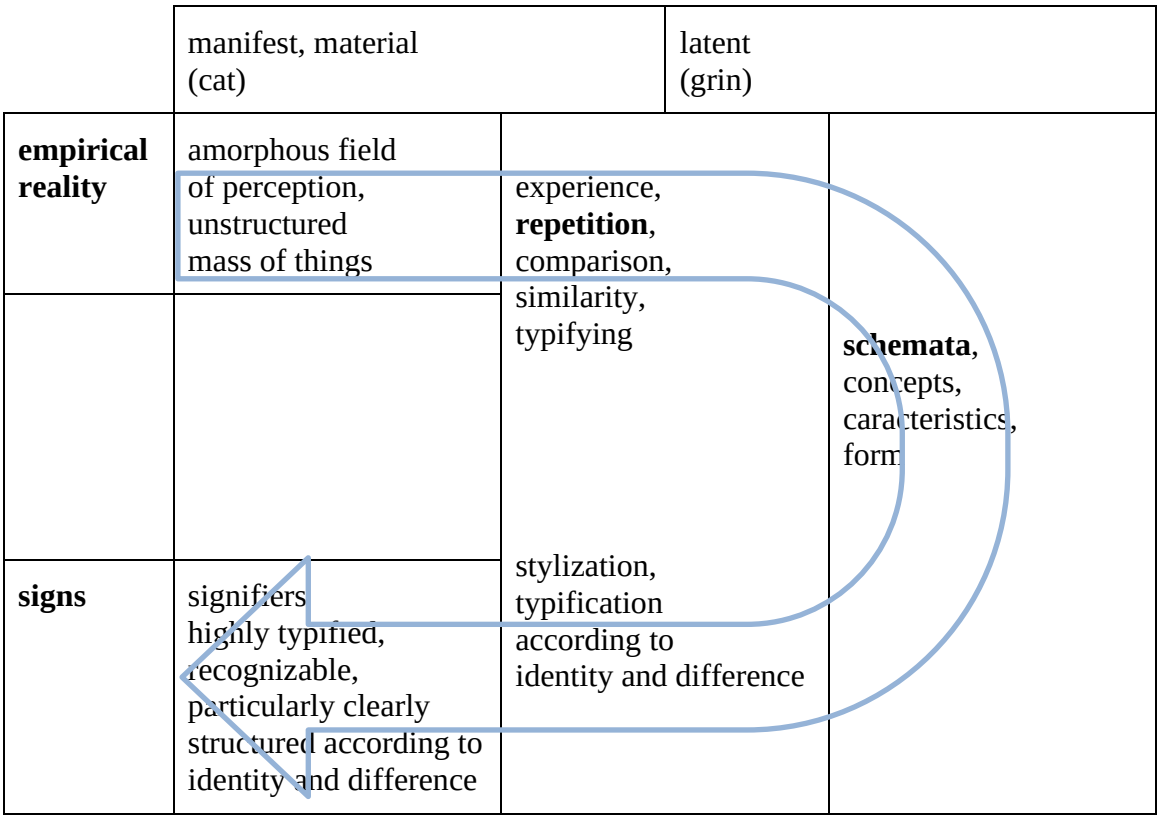
31. Signifiers

In addition to the question of repetition and material persistence, signs have a second astonishment to offer: Mankind has developed the incredible technique of deposit/laying down that which has been detached in special things that are highly typified from the outset, in material signs, the signifiers.

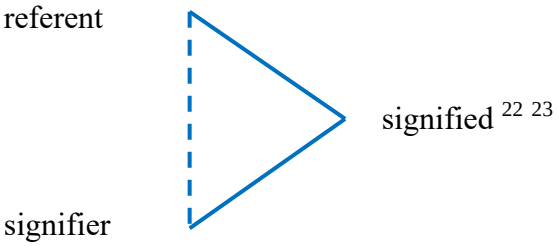
Signs stand for a double movement: In a first step of abstraction or typification, the form is detached from the material (giving it an enigmatic 'immaterial' status) and a schema is created; only to be rematerialized again in a second step – in the signifiers.

With the signifiers, one could say, mankind has given the grin a cat again.

If you also want to put this into a diagram, the result is:



This corresponds, and this is of course no coincidence, to the established semiotic scheme that understands the sign as a triangular relationship between signifier, signified and referent:



If my text asks in what way material persistence, change and repetition are systematically connected, then the center of the question has shifted again. For once rematerialized, signs participate in everything that has played a role in my previous argument: They stand (1.) for the transition from individual things to schemata and concepts, to characteristics and form; and thus (2.) for a typification process that presupposes repetition, i.e. comparison, experience, and memory. And finally, as material signs (as signifiers) they (3.) reenter the world of things, whereby they participate in their materiality and their persistence.

32. Stylization, Abstraction, and Typification of the Signifiers Themselves

Signs are special things. As material signifiers they coexist – side by side – with other things; and at the same time they are genuinely different from them: As a result of typification processes, they bear their stamp, insofar as they themselves are typified, reduced and abstracted in an extreme way; for the signifiers, material is selected that is particularly recognizable – think of the black and white of writing – and in which identity/recognizability and differences can be inscribed with particular clarity. With the result that signifiers, unlike other things, can actually be repeated 'identically' and not just similarly.

Signs thus stand for a special type of duration. They combine both material persistence (monumentalization) and repetition, precisely because they are the result of repetition processes.

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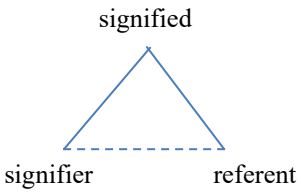
[22] In the literature, the triangle is usually shown rotated by 90 degrees, and also mirrored:



The difference is not insignificant: The classical form assumes the existence of material signs (signifiers) and aims to explain how these come to refer to the world via signifieds (cf. Ogden, Charles K.; Richards, I. A.: The Meaning of Meaning [1923]. NY: Harcourt 1945, p. 11). My approach reverses this and assumes a material world (as a sphere of referents) that is schematized (what means that signifieds are created) in order to then be rematerialized (signifiers).

[23] And there is a second, important difference; in the traditional model, the signified remains completely vague (lexicons speak diffusely of 'the meaning,' Ogden/Richards of 'thought'); and this was the reason why materialist theories rejected the signified and focused solely on the material signifiers. If the signified is derived via schema theory, however, this problem disappears, because the formation of signifieds and schemas is now understood as a material process and attributed to material chains of repetition.

VIII. Final Consideration: Repetition, Monumentalization, Change

33. Concepts of Theory

What is the result of my considerations? On the one hand, I think it is the task of theory to constantly review the concepts with which it works and to reveal systematic connections between concepts that have hitherto been isolated from one another. Media studies in particular has the problem that the majority of the terms it uses are only very inadequately defined. In many cases, everyday concepts are adopted, and one relies on the fact that language always already knows what the different terms mean: Storage techniques seem to be 'something quite different' from mechanical reproduction or copying; repetition is, of course, different from similarity; schemata are 'qualitatively' separate from sign and form. And indeed, it would be culpable to put all this into one and to go back behind qualitative distinctions that language makes.

Nevertheless, it makes sense to ask in what way the concepts are connected. And it seems to me that this can only be clarified if models are developed that show or claim such correlations in order to make them visible, testable, or debatable. And since we are talking about models, I accept a certain schematism that this entails. So, let's look at some of the connections.

34. Material Persistence

My consideration, I think, has shown that repetition is embedded in a whole network of related concepts. First it is related to material persistence, whose function of ensuring cultural continuity it shares, but from which it differs structurally in that it is not chained to the individual object but has its place between the objects or events. Repetition is discontinuous; between the individual cases there are phases in which the repetition remains latent.

Material persistence thus becomes a kind of special case. While storage media, as mentioned, seek an alliance with the 'natural' persistence of matter, this does not apply to repetition; or only if one asks about the agencies that guarantee repetition. An example was memory, which, however limited and unreliable, 'monumentally' survives the latency phases between repetitions. However, it has been shown that not in every case of repetition can these instances be named immediately.

Only the repetitions themselves appear on the surface of the discourses. And these are, as already mentioned, discontinuous; separated from each other by a latency phase.

35. Change / Displacement

The systematic counterpart to material persistence is change; it forms the second reference, and repetition is of course also involved in change. It is easy to lose sight of this if, guided by Assmann, one considers repetition as a technique of cultural continuation. But didn't Butler's theory of performativity, for example, link far-reaching political claims to the successive shifts that occur in repetition? And didn't post-structuralism – more generally – understand repetition as unforeseeably open to the future?

My reconstruction, I admit, tends to follow the Assmannian path. In fact, however, I think that the post-structuralists have paid too little attention to the concrete mechanisms that characterize the repetition, with the result that they overestimate the dynamic moment. Neither the binding to institutions is taken into account,[24] i.e. the question of which agencies save the patterns over

[24] …institutions definitely play a role in the linguistic theory of speech acts that is used…

the latency phase; nor – more generally – the genuinely retro-referential, conservative moment that makes the repetition a repetition in the first place.

Repetition, I really think, is conservative above all else. And systematically reconstructing the overwhelming power of conventions may call them into question more effectively and possibly serve an open future more than the repeated asseveration that repetition always contains displacement, difference, and development.

But of course, this is the case. In the terms I propose here, the problem might be reformulated as a tension between those characteristics that remain constant in the repetition (for the repetition to be one at all) and those that change; either because they vary with the context without damaging the pattern of repetition, or by shifting the repetition itself in a particular direction. And then this shift could possibly be related back to transformation distance and to 'work'...

36. Characteristics

But the main point of my text, I think, is a different one; namely the fact that repetition says goodbye to the object and forces attention to switch to the level of characteristics.[25] Only where the identity of the object ends, and with it the material persistence, does the space of repetition begin. And it is precisely at this point that the change of level to the characteristics takes place.

Repetition functions discontinuously and yet has the power to bridge the latency phases and establish a new stability or continuity at the level of the characteristics. (And media studies, I think, has the task of showing which specific cultural and media techniques make this possible).

Objects are connected to one another through repetition and similarity, through the network of their common characteristics. And they do so behind their backs, so to speak, because the characteristics, unlike the objects themselves, are not openly visible. It is only in the comparison, in the observation of repetition and similarity, that they emerge at all, that they become perceptible; and this, I think, gives repetition its special position.

Repetition, I said, is a process, and that means it is bound to time. This does not apply to the network of characteristics that it reveals or establishes – and this is remarkable. This network may also change successively, take language change for example, but above all it is static, a structure. At the level of characteristics, one could say, a second-order stability emerges; a stability that – and this is the point I am writing about here – competes with the obvious, material persistence.

37. Form

And striking, I think, is the spectacle of the transformation itself, the transformation of material objects/content into *form*.

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[25] I first discussed this change in 1989 on the completely different terrain of metaphor theory (W., H.: Metapher, Kontext, Diskurs, System. In: KodikasCode. Ars Semeiotika. An International Journal of Semiotics. Vol. 12, No. 112, 1989, pp. 21-40,
https://homepages.uni-paderborn.de/winkler/Winkler--Metapher,-Kontext,-Diskurs,-System.pdf,
in English: https://homepages.uni-paderborn.de/winkler/Winkler--Metaphor-context-discourse-system.pdf).

38. Signs

And finally: the signs. Signs arise – if my reconstruction is plausible in any way – exactly where the change in question takes place: Since signs do not record the things themselves but their characteristics, they always presuppose repetition (and the transformation of repetition into form). Signs do not stabilize/continue objects, but rather bundles of characteristics.

If we take the example of language again, it is words that represent these bundles of characteristics (schemata or abstracts). In the case of oral cultures, the words – in terms of media technology – appear to be distributed across two aggregate states: There are the acoustic signifiers on the surface of the discourse, which trail off in an ephemeral way; and secondly, there is the storage medium of the distributed human memories, which stores the representations – however precariously – in a material/monumental way.

In the case of writing – and this is where the re-materialization actually becomes clear – the transient sounds have been replaced by tangible-material signifiers. As a result, these now persist materially in parallel to the material memories, in interdependence and in competition with them.

With rematerialization, the signifiers have become things and take their place side by side with the things they describe. The fact that they function quite differently from them is thus obscured. This leads to problems in media studies: On the one hand, one believes that one can restrict oneself to the signifiers – 'the materiality of communication'[26] – and say goodbye to the signified 'materialistically;' and then it must become a complete mystery how it is possible for the signifiers to refer to the materially parallel existing things after all.[27]

The mediating link, however, is repetition. Signs are special things, above all because they always already presuppose, always already contain within themselves, the repetition that must first occur in things. Signs encompass (unlike the things they denote) many repetitions, many things.

The actual long-term memory is the sign, as a recorded form.

39. Stylization and Typification

Repetition, I said, ensures stylization and typification. Schemata/signs differ more conspicuously than the things they describe.

Repetition drives things together into groups like a herding dog drives sheep. Stylization and typification accentuate – and over-accentuate – the similarity within the group (up to the illusion of 'identity') and the differences between the groups. In this respect, too, 'structure' is created here. And structure, that is my point again, is more stable than the source material from which it is a deduction.

40. Repetition of the Sign Itself

The sign contains the repetition, and it is itself – in its entire constitution – designed to be repeated. Signifiers, as already mentioned, are chosen in such a way that they are particularly recognizable.

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[26] See: Gumbrecht, Hans Ulrich; Pfeiffer, K. Ludwig (Hg.): Materialität der Kommunikation. Frankfurt am Main: Suhrkamp 1988.

[27] ...and as a result – a clever solution – it was simply denied that the signs have any reference to the world at all.

Not only is the content typified and stylized on its way via repetition to becoming a sign, but the signifiers themselves reflect this. And again, it is treacherous that this appears to be completely self-evident. It is part of our everyday definition of signs/signifiers that they can be repeated any number of times and that they remain 'identical' to themselves – like coins in circulation.

This is probably the ultimate form of stability. As far as the functioning of signs is concerned, a fact, and at the same time – of course – illusionary; an illusionary reification, similar to what Marx describes as the fetish of the commodity.

In the case of the commodity fetish, it is the indisputable thingness of things that obscures the view of the social process of their production; in the case of signs, it is the solidity of the signifiers that obscures the processes of repetition and typification, and the fact that it is they who bear the sign.

41. Conclusion

The secret of repetition is this cascade: the fact that repetition (1.) protocols/schematizes/abstracts what is repeated and condenses it into schemata/types; then (2.) encapsulates and reifies it in sign form; and finally (3.) makes it – schematized, typified and encapsulated – the subject of a new kind of repetition.

6 Traces

Does Traffic Retroact on the Media Infrastructure? [1]

1. Intro

The attempt to understand media processes as 'traffic' is relatively new within media studies. Harold Innis was one well-known trailblazer, who in the 1950s first studied the network of trade routes in Canada before progressing to the 'trade routes of the mind,' the media.

Methodologically speaking, there are several difficulties linked to this approach. For instance, it is initially not entirely clear which metaphorical level underpins the argument. Is a structural parallel concerned? An attempt to draw conclusions from the visible networks of actual traffic for the far less visible symbolic ones? Or is the symbolic traffic of the media actually to be subsumed beneath three-dimensional physical traffic? It was not without reason, albeit just as confusing, that Marx, for example, designated social relationships overall as forms of intercourse.[2]

A second difficulty is no doubt that, although traffic infrastructures can be well observed, the traffic itself that occurs on the infrastructures definitely cannot. The hustle and bustle of traffic, irreducibly tied to volumes, initially seems only to submit to a quantitative study. A field in which cultural studies is surely not well-versed.

The observation I wish to make in the following essay elegantly circumnavigates these issues by initially sticking to the basics. I want to present three models that consider the connection between traffic and structure/infrastructure in different terrains. The background to this consideration however is anchored in down-to-earth media studies. For the question is: How can one create a model for media history? What drives media history? What is the driving force, or forces, behind the observable changes in impact?

Within media studies, media history is still largely modelled from the top down, albeit in a wide variety of versions. Frequently, the model moves along a chain of technological inventions and from there investigates the impact on society, e.g., 'television has changed the world.' Or the opposite direction is taken, starting with society (but again top down) and

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[1] Published in English: Winkler, Hartmut: Traces – Does Traffic Retroact on the Media Infrastructure? in: Näser-Lather, Marion; Neubert, Christoph (eds.): Traffic. Media as Infrastructures and Cultural Practices. Amsterdam: Rodopi 2015, pp. 92-113 (translation by Jeremy Gaines).
First printed in German: W., H.: Spuren, Bahnen. Drei heterogene Modelle im Hintergrund der Frage nach den Automatismen. In: Bublitz, Hannelore et. al. (eds.): Automatismen. München: Fink 2010, pp. 39-59.
The German text is available online: https://homepages.uni-paderborn.de/winkler/Winkler--Spuren,-Bahnen--Wirkt-der-Traffic-zurück-auf-die-mediale-Infrastruktur.pdf

[2] (Note on translation:) In German, the term *Verkehr* (intercourse) means 'traffic.'

resorting to the great historical phase models outlined by historians or social scientists.

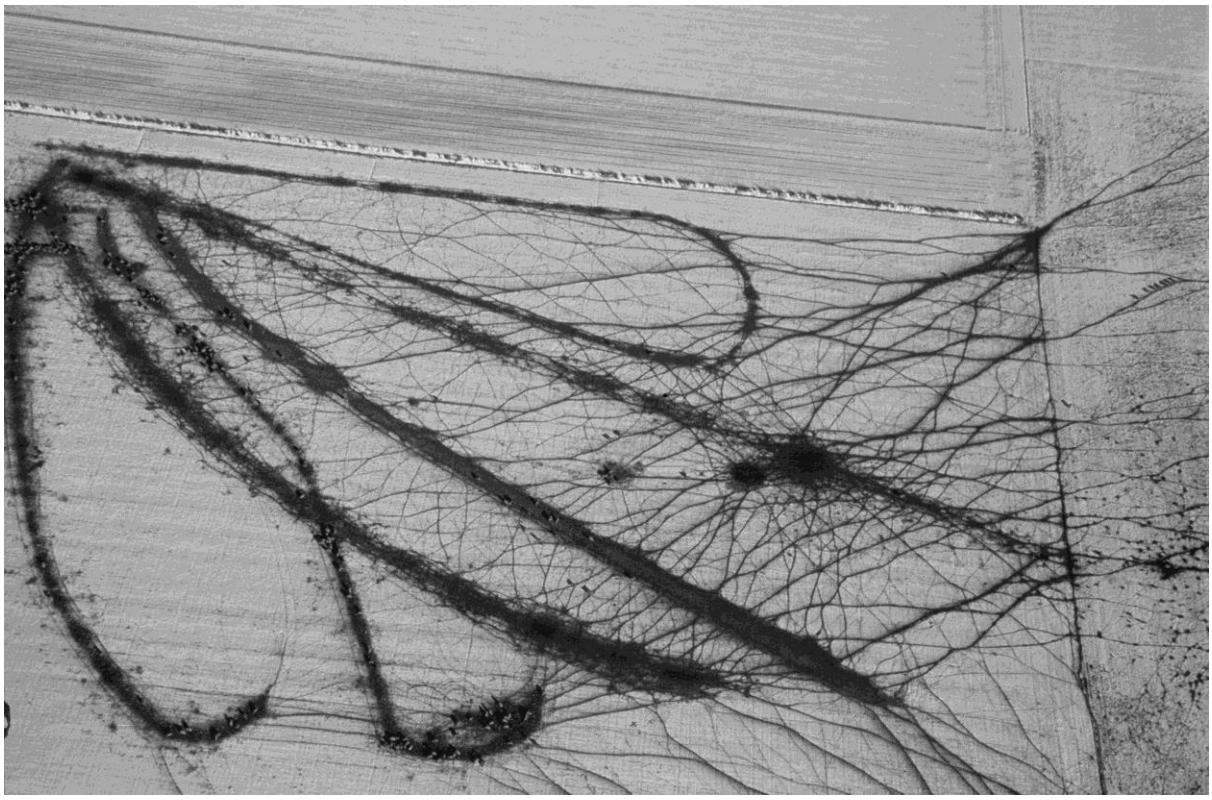
In contrast, approaches that attempt a ‘bottom-up’ writing of media history encounter more difficulties as regards methodology and content. When cultural studies focus on media usage and people, for instance, it is often processes of reception that are described. It remains a moot point whether they actually reach the ‘media’ level itself. The decisive question, however, would be whether ‘bottom-up’ processes are actually capable of spawning new media, for example. Even the term ‘usage’ is problematic in itself, implying as it does that the medium is primary and the condition precedent, necessarily making its use something secondary...

This all describes the motivation rather than the field I will explore. At first, I will invest only in the background, in models and concepts we may need in order to be able at some point to answer questions such as those outlined. Specifically, I will address the metaphor of the trace and priming. In the first section I will focus on the concept of the trace as Sybille Krämer introduced it to the debate in media studies; in the second section I will present certain theories of memory that have a common perspective in trace and priming; and in my third and last section I will, admittedly in a somewhat crude jump, switch to the level of a conceptual generalization.

Overall, my essay will provide tesserae and not a self-contained structure. This seems fitting to me, because I think that any ‘science of media traffic’ is still in its early infancy.

2. Trace

I would like to start with a picture.[3]



At first glance this picture looks like a Jackson Pollock, but in actual fact is the photo of a flock of sheep in the snow, originally published in the German magazine Stern. Essentially this photo encapsulates the entire problem discussed below.

[3] Flock of sheep in the snow. Photo by Jürgen Gebhard. @ Picture Press, Hamburg. Printed with permission.

There is great interest in the notion of trace at present. Following on from Derrida's *Grammatology* (1967) and Levinas' *The Trace of the Other* (1963), various writers have integrated the concept into their semiotic deliberations and thinking on the theory of the script.

In 2007 German philosopher Sybille Krämer presented a compendium that shines light on the results of this debate and seeks to advance it in a new direction.[4] In addition to Derrida and Levinas, she referenced Sebeok/Urniker-Sebeok, *You Know My Method* (1981), and Ginzburg, *Morelli, Freud and Sherlock Holmes* (1983). With her book, Krämer undertakes an ultimately semiotic project.

> "Can it be that the occupation with the notion of trace is fertile and fitting for this day and age, because it is able to counter the carefree and reference-less floating of signs with something grounded in a kind of 'semantics of things'? Indeed, in the context of reading traces activities such as 'representing.' 'reading,' and 'interpreting' assume a significance that does not apply to the self-sufficient sign systems. Thinking about the trace, on the one hand we forge a link to the semiological-representational debate, yet at the same time with reading traces we hold Ariadne's thread in our hand, which leads us out of the 'pure' world of signs and connects us to the world's tangible, physical and material side, which is the conditio sine qua non of traces arising and being open to interpretation. Does this mean that traces are the interface at the emergence of meaning and non-meaning?"[5]

In the paradigm of the trace Krämer discerns an opportunity to overcome the sterile juxtaposition of signifier and signified and to escape the established simple, bipolar model of representation. Krämer considers the model of representation problematic, because it is ultimately based on the body-mind dualism, which it extends into the space of media theory. As such the traces project follows on from earlier projects of hers; a number of major studies on performativity, for example, had the same objective, namely to 'ground' the concept of the sign by linking it back to materiality and practices.

This is even more evident as regards poststructuralist discourse. She acknowledges that it has enforced the realization, "that we have no non-signifying access to the world and reality independent of interpretation";[6] at the same time however she accuses it of having entered an uncritical alliance with the development of technology, which in terms such as 'information' and 'immaterialization' possibly even misunderstands itself:

> "It seems only logical that so-called postmodern thought invokes signs bereft of references and a world that is seamlessly constituted by text: Dematerialization, derealization, disembodiment, computerization, virtualization, the euphoria of simulation – these are just different expressions for the tendency to release signs from all connection with non-signifying elements and thus to posit the world's nature as signs as absolute. *Yet this makes things disappear*."[7]

Here the trace promises a way out, because it is clearly (more clearly than other signs) tied to materiality:

> "Traces appear before your eyes in concrete form; there is no trace without a physical signature. Traces are the result of touch and thus are certainly 'material': They appear

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[4] Krämer, Sybille; Kogge, Werner; Grube, Gernot (eds.): Spur. Spurenlesen als Orientierungstechnik und Wissenskunst. Frankfurt a. M.: Suhrkamp 2007.

[5] Krämer, Sybille: Was also ist eine Spur? Und worin besteht ihre epistemologische Rolle? Eine Bestandsaufnahme. In: Krämer, Spur, op. cit. (FN 4), pp. 11-33, here: pp. 12f. (transl. FN 5-9 H. W.).

[6] Ibid., p. 12.

[7] Ibid.

> in and through the material. Traces belong to the world of things. Thus only by virtue of a continuum in the material, corporeal and sensors aspect of the world is it possible to leave and read traces."[8]

That said, we have a paradox in that traces also stand for something absent.

> "In the hollow of the impression, with which a movement in time takes shape as a configuration in space, it is apparent that someone or something has passed. The presence of the trace attests to the absence of that which generated it. In the visibility of the trace, that which created it is specifically withdrawn and invisible."[9]

It is this tension that especially interests Krämer and which she will consider in her own article in that publication.[10] Now, all of this seems entirely plausible and fruitful for a media theory that always (and here I would agree with Krämer) has to do with the 'materiality of communication.' However, what is noteworthy is that Krämer's definition of the trace omits a very important aspect of it, and not just in the passage quoted, but in all ten attributes she lists for the concept.[11] It is the peculiarity *that traces are often not left once, but several times, meaning that they either continually overlap and thus become unrecognizable or, on the contrary, deepen by means of inscription.*

Medieval highways, for instance, were certainly not, as we might think, narrower than today's motorways. Indeed, reconstructions have shown that they were up to 500 meters wide; for the simple reason that the wagon wheels destroyed the generally unpaved roads as they were using them. When the ground had been softened by rain, ever new parallel and detour tracks had to be carved. Consequently, the woods were not traversed by clear lines, but by a complicated network of parallel and ever-dissipating ramifying tracks.

The image of the flock of sheep cited above effortlessly reflects this aspect. The everyday notion of traces at least has a quantitative side. And a privileged reference either to the mass or to the *repetition*. Neither Sebeok/Umiker-Sebeok nor Ginzburg focus on this quantitative side – Krämer borrowed from them the perspective of the hunter who reads and follows traces and tracks. In Krämer's approach the emphasis is again on reading, recognition and knowledge, and to be more precise, a kind of 'knowledge' initially oriented on the individual case, the individual trace.

Naturally other forms of knowledge are also possible; the trace the flock leaves behind obeys its own laws and poses its own questions. If we were to at least roughly outline them, we could name, e.g., the following:

1. The question of quantities themselves. 'Size does matter' is a realization that imposes itself, yet certainly does not necessarily submit to a description, e.g. with statistical means. All problems of observation become compounded as soon as it is necessary to keep an eye on a greater number of actors.
2. The question as to which pattern(s) emerge in the multitude and in the superimposition of traces. In the above sheep photo it is the privileged aerial view that makes our eyes jump from the level of the sheep to that of the emerging patterns. The traces appear to be rule-based, and at the same time difficult to explain; they seem to be following a strange attractor, strange in that an external reason, a cause, cannot be instantly named.

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[8] Ibid., p. 15.

[9] Ibid., p. 14.

[10] Krämer, Sybille. 'Immanenz und Transzendenz der Spur: Über das epistemologische Doppelleben der Spur.' In: Krämer, Spur, op. cit. (FN 4), pp. 155-181.

[11] Krämer, Was also ist eine Spur, op. cit. (FN 4), pp. 14-18.

3. A third question would be: How is the individual action, e.g. the path of a single sheep, related to the emerging overall structure? In the pattem the fact becomes apparent that between the individual actors (sheep) there are mechanisms of coordination or, in more timid/open terms, a connection. Still, what this connection looks like, what it actually consists of, is not yet known. And moreover:
4. The question becomes complicated precisely because there are these two levels. Although we would initially ascribe the status of actor to a single sheep, we tend to also model the flock as a kind of collective subject. The extent to which this is justified would surely differ in each case and warrant individual examination.
5. The fifth question concerns the surface or space in which the traces leave their mark. Naturally this is also relevant in the case of individual traces, yet in the case of collective or repeated traces it is dramatic, precisely to the extent to which it concerns, among other things, the creation of an 'overall image.'
6. And finally, we needed criteria in order to be able to reliably separate collective phenomena and repetition at all...

Far from being able to answer or operationalize even one of these questions, I would instead like to move into different terrain. Indeed, the concept of the trace is to be found in another context, which may be able to bring us closer to the aforementioned.

3. Memory Theories

This context is that of the *memory theory*. Harald Weinrich showed in an essay in 1964 that the metaphors by which human memory is modelled and understood are grouped around two poles, namely the wax tablet and the storeroom.[12] While the storeroom or warehouse metaphor is based on a relatively simple accumulation of stored content and presumes that it, faithfully preserved, will reappear in due course in identical form, the metaphor of the wax tablet takes a more complicated approach. We find the metaphor itself even in Plato's Theaetetus dialogue:

> "I would have you imagine, then, that there exists in the mind of man a block of wax, which is of different sizes in different men; harder, moister, and having more or less of purity in one than another, and in some of an intermediate quality. [...] Let us say that this tablet is a gift of Memory, the mother of the Muses; and that when we wish to remember so anything which we have seen, or heard, or thought in our own minds, we hold the wax to the perceptions and thoughts, and in that material receive the impression of them as from the seal of a ring; and that we remember and know what is imprinted as long as the image lasts; but when the image is effaced, or cannot be taken, then we forget and do not know."[13]

In Classical Antiquity, wax tablets were a popular device on which to write things down, thus it is indeed an actual, material media technology that is chosen as an image for the memory here. And starting with Plato, we find the metaphor in a long series of different versions. Various dimensions merge in the metaphor. Firstly, there is proximity to the problem of perception, if we were to speak here quite colloquially (entirely in keeping with the wax tablet meta-

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[12] Weinrich, Harald: Typen der Gedächtnismetaphorik. In: Archiv für Begriffsgeschichte, 1964, pp. 23-26; see: Assmann, Aleida: Zur Metaphorik der Erinnerung. In: Assmann, Aleida; Harth Dietrich (eds.): Mnemosyne. Formen und Funktionen der kulturellen Erinnerung. Frankfurt a. M.: Fischer 1991, pp 13-35, here: p. 13.

[13] Plato: Theaetetus [ca. 369 B.C.]. In: The Dialogues of Plato. In Five Volumes, vol. IV, London: Humphrey Milford 1892, pp. 193-280, z54f.

phor) of 'impressions;' secondly the threat of forgetting is addressed more clearly than in the case of storage; thirdly overlapping and overwriting, a particularly interesting dimension in this context.

As Assmann shows, later overlapping and overwriting are also frequently illustrated with the palimpsest.[14] The wax tablet and palimpsest stand for mutability and the tendency toward the unavailability of the memory; they stand for the 'book with no definite form, the [temporally] dynamized book.'[15] From here Assmann returns to the trace:

> "In 19th-century psychology the trace became the central concept in research into memory. Karl Spamer defined it as 'a force exerted on an inanimate object' that retains energy within it. Memory and trace virtually become synonymous: 'One can [...] speak of a memory of all organic material, indeed, material altogether, in the sense that certain influences leave more or less lasting traces on it. Stone itself retains the trace of the hammer that has struck it.'"[16]

Probably the best-known version of the wax tablet metaphor is Freud's 'mystic writing pad' which likewise seeks to grasp the interrelationship between perception and permanent traces/ memory. Here, interestingly, memory is associated with the unconscious, insofar as the permanent traces on the wax tablet cannot initially be read.

It seems to me, however, that in the present context an earlier text in which Freud explores the concept of *priming* is far more important; the concept of priming is relevant to me because it directly abuts on that of the trace. Freud wrote his 'Project for a Scientific Psychology' as early as 1895,[17] in a phase in which he integrated medical-physiological and neurological ideas far more strongly than in his late work and sought to describe mental processes from a dual perspective, the psychological and the physiological/energy-based. This essay likewise addresses the connection between perception and memory, or rather the puzzle that the mental apparatus, on the one hand, is always ready to absorb new information, but, on the other, nonetheless changes with every perception by retaining permanent traces – that is the phenomenon of memory.

> "One of the chief characteristics of nervous tissue is that of 'memory': that is, speaking generally, a susceptibility to permanent alteration by a single process. This offers a striking contrast to the behaviour of a material that allows a wave-movement to pass through it and then returns to its former condition. Any psychological theory deserving consideration must provide an explanation of memory. Now any such explanation comes up against the difficulty that, on the one hand, it must be assumed that after an excitation neurones are permanently different from what they were before, while, on the other hand, it cannot be denied that, in general, fresh excitations meet with the same conditions of reception as did the earlier ones. Thus the neurones would appear to be both influenced and also unaltered-'unprepossessed.' We cannot off-hand imagine an apparatus capable of such complicated functioning."[18]

Freud's initial answer is rather unrefined:

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[14] Assmann, Zur Metaphorik, op. cit. (FN 12), p. 19.

[15] Ibid.

[16] Ibid., p. 21 (transl. H. W.); Assmann quotes Spamer, Karl: Physiologie der Seele: Die seelischen Erscheinungen vom Standpunkte der Physiologie und der Entwickelungsgeschichte des Nervensystems aus wissenschaftlich und gemeinverständlich dargestellt. Stuttgart: Enke 1877.

[17] Cf. Freud, Sigmund: Project for a Scientific Psychology. In: The Origins of Psycho-Analysis: Letters to Wilhelm Fliess, Drafts and Notes: 1887-1902. New York: Basic Books 1954, pp. 347-445.

[18] Ibid., pp. 359f.

> "The situation is accordingly saved by assigning the characteristic of being permanently influenced by excitation to one class of neurones, and the immutability – the characteristic of being fresh for the reception of new excitations – to another class."[19]

However, he immediately realized he had to modify his response and developed the so-called 'theory of contact-barriers':

> "Thus there are permeable neurones (offering no resistance and retaining nothing) which serve the function of perception, and impermeable neurones (offering resistance and retaining quantity [...]) which are the vehicles of memory and presumably, therefore, of psychical processes in general. [...]. [The neurons of memory] are permanently altered by the course of an excitation [...][;] their contact-barriers are brought into a permanently altered condition. [...] [T]his alteration must consist in the contact-barriers becoming more capable of conduction – less impermeable – becoming, that is, more like those of the [...] [system of perception]. We shall describe this condition of the contact-barriers as their degree of *facilitation [Bahnung]*. We can then assert that memory is represented by the facilitations existing between the [...] [memory-] neurones."[20]

The concept of facilitation, which we now term priming, is a major gain. It moderates the gap between the two types of neurons initially exposed as separate; between perception and memory, and in more general terms between process/actuality and storage/persistence.

Moreover, the concept ties the structure of memory back to perception; memory occurs when current perceptions inscribe themselves – as priming – in the structure. In addition, the fact that Freud clearly considers his model to have physiological foundations enables a *quantitative* perspective:

> "Now what does the facilitation in the [...] [memory-] neurones depend on? Psychological experience shows that memory (that is, the persisting force of an experience) depends on a factor that is described as the 'magnitude' of the impression and on the frequency of the recurrence of the same impression. Or, translated into our theory, facilitation depends on the quantity [...] [of excitation] which passes through a neurone in the excitatory process and on the number of repetitions of that process."[21]

Thus, Freud says that strong stimuli leave different traces/primings to weak stimuli; and that in addition to the intensity of stimuli, the frequency of their repetition also plays a role. The traces of memory grow stronger with use, which brings us back to the aerial photo of the flock of sheep.

The concept of priming in fact brings all these moments together. Yet the result itself is certainly not counterintuitive or perplexing but is indeed also connected to everyday ideas. This becomes clear if we switch to the concept of association, which Freud repeatedly used in all kinds of different functions, from treatment techniques, i.e., the instruction to the analysand to freely associate, to the *Psychopathology of Everyday Life*.

Psychoanalysis is able to rely on a finished body of work as regards the doctrine of association, one that is far older and extends from Aristotle's *De Memoria* to Leibniz' *Of the Association of Ideas*,[22] Locke and Hume to Schopenhauer.[23] In Freud's day, association was one of

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[19] Ibid., p. 360

[20] Ibid., pp. 360f. (emphasis in original, last sentence of the quotation also italicized in original).

[21] Ibid., p. 361

[22] Leibniz, Gottfried Wilhelm: New Essays Concerning Human Understanding [1704]. New York: McMillan 1896, pp. 281ff.

the common concepts in psychology. The theories of association asked how the various types of mental material – be it ideas, images or concepts – relate to one another; which types of associations can be meaningfully differentiated and how they emerge on both the individual and collective levels.

'Association' is a relational concept that searches for connections between existing entities; where an overall picture emerges, the concept of association frequently transforms into ideas of networks. Individual associations can be fixed or fluid; from a genetic perspective one asked what strengthens or weakens them; and one realized that they naturally fade, so to speak, if they are not refreshed in one way or another.[24]

Thus, 'association' also has a structural and a process-related side; this term too systematically mediates between structure and use. What it is usually lacking is the quantitative-physiological element that Freud clearly emphasizes in his concept of facilitation ('priming'); at best in the psychology of learning one has 'understood learning by heart and practicing as the [targeted] creation of associations.'[25]

I am able to refer only in passing to another dimension connected to the concept of the trace as inscription; indeed, above all Nietzsche considered memory overall to be dependent on pain, on a painful inscription.[26] And there are several theories referencing this that draw from the trauma, as a permanent injury to the psyche, far-reaching consequences for the memory overall.[27]

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[23] "Whoever wishes to call up something in his memory first seeks for a thread with which it is connected by the association of thoughts. [...] Our immediate remembrance of words, that is, our remembrance of them without the assistance of mnemonic contrivances, and with it our whole faculty of speech, ultimately depends upon the direct association of thoughts." (Schopenhauer, Arthur: The World As Will And Idea [1844], vol. 11, London: Kegan 1909, pp. 316, 317)

[24] "Ideas fade in the memory. – Concerning the several degrees of lasting, wherewith ideas are imprinted on the memory, we may observe, that some of them have been produced in the understanding, by an object affecting the senses once only, and no more than once; others, that have more than once offered themselves to the senses, have yet been little taken notice of; the mind, either heedless as in children, or otherwise employed, as in men, intent only on one thing, not setting the stamp deep into itself. And in some, where they are set on with care and repeated impressions, either through the temper of the body, or some other fault, the memory is very weak; in all these cases, ideas in the mind quickly fade, and often vanish quite out of the understanding, leaving no more footsteps, or remaining characters of themselves, than shadows do flying over fields of com; and the mind is as void of them, as if they had never been there. [...] The memory of some men, it is true, is very tenacious, even to a miracle; but yet there seems to be a constant decay of all our ideas, even of those which are struck deepest, and in minds the most retentive; so that if they be not sometimes renewed by repeated exercise of the senses, or reflection on those kind of objects which, at first, occasioned them, the print wears out, and, at last, there remains nothing to be seen. Thus the ideas, as well as children of our youth, often die before us: and our minds represent to us those tombs to which we are approaching." (Locke, John: An Essay Concerning Human Understanding [1690]. London: Tegg 1825, pp. 86f.).

[25] Ritter, Joachim (ed.) Historisches Wörterbuch der Philosophie [Assoziation], vol. 1, Darmstadt: WBG 1971, p. 552 (add. H. W.).

[26] "How do you give a memory to the animal, man? How do you impress something upon this partly dull, partly idiotic, inattentive mind, this personification of forgetfulness, so that it will stick?" ...This age-old question was not resolved with gentle solutions and methods, as can be imagined; perhaps there is nothing more terrible and strange in man's prehistory than his technique of mnemonics. 'A thing must be burnt in so that it stays in the memory: only something that continues to hurt stays in the memory' – that is a proposition from the oldest (and unfortunately the longest-lived) psychology on earth. [...] When man decided he had to make a memory for himself, it never happened without blood, torments and sacrifices: the most horrifying sacrifices and forfeits." (Nietzsche, Friedrich: On the Genealogy of Morality [1887]. Cambridge: Cambridge UP 2006, p. 38).

[27] See: Assmann, Jan: Moses the Egyptian. The Memory of Egypt in Western Monotheism. Cambridge: Harvard UP 1998.

However succinct my account has been, the above models of memory relate to the initial question as to the 'trace,' the inscription, no doubt a privileged field. They have the major advantage that they rest on quotidian factual evidence and introspection. And the essential features surely would not be contentious: Memory does not seem simply given as an organ but refers back quite naturally to the process of its creation. Even if we have to assume that memory entails an organic 'capacity,' it is clear that the memory only receives its structure, content, and concrete form in the process of life-long perception/experience, with perception and experience inscribing themselves into the memory. From the opposite perspective the memory represents a kind of record of these perceptive and experiential processes; however, compressed, warped and distorted, they are 'completely' contained, monumentalized, within its structure.

Even everyday language would ascribe priming, impression, and trace to the memory. In the concept of association, the idea of a linear linkage combines with more developed network models; the reference to repetition (e.g. in the mechanism of learning by heart) seems self-evident and forges a link to the quantitative aspect.

Two things are confusing, however. First, the fact that metaphor plays a prominent and not entirely controllable role here. When we are talking about 'trace' and 'priming,' these are of course initially metaphors, i.e., models, which structure experience but are by no means directly accessible to experience itself. This also applies to the wax tablet and mystic writing pad. We resort to external media technologies to illustrate something that is precisely not an external process and eludes direct observation. As a technical metaphor, media technology provides the model to understand what remains hidden in the darkness of individuals' heads.

The second confusing element is connected to this. The models mentioned initially refer to one person's memory, which poses the question as to whether equivalent or compatible ideas exist in the intersubjective domain, too. The fact that we use *media technologies* to aid understanding may moderate the jump for they are always and on principle located in the intersubjective realm.

Such a transition is in fact possible. Yet the models in question have the shortcoming of in part resting on a great many presuppositions and can only be considered plausibly with great circumspection. For this reason, I wish to limit myself to very short keywords here that can at best allude to the context and name the points in which the question ramifies in certain subsequent discourses. (I find this somewhat easier, since I have voiced my opinion in detail on several of these points elsewhere.)

1. A systematic transition between the problem of memory and the inter-subjective domain appears in the theories on orality, i.e., on those tribal societies that were unable to write, and thus had to entrust all cultural tradition to the wax tablet of personal memory. Constitutive for these theories is the element of ritual repetition; of a collective technique that has the task of relating individual memories to a collective one and synchronizing them; ritually repeated discourse events refresh memories or inscribe the contents in memory. Thus, in terms of media technology, the key thing is the transition between the individual and collective memory. The large number of individual memories represents the distributed 'hardware' on which the collective memory runs.
2. On the micro-level of the discursive, phenomena relating to rhythm are interesting. In music, in the beating of drums, and in dance steps, repetition, inscription, and structural formation combine; the bodies and the world they inhabit are structured by an external medium. Marie König has shown that particular cave paintings are based not on singular, but repeated incisions at the same spot, which likewise forges a link back to the rite and

ritual affirmation.[28] Archaeologists are constantly finding prehistoric bones with regular incisions; the oldest is approx. 40,000 years old.[29] Most of them are interpreted as notations of the lunar cycle, i.e., a calendar, meaning that mimetically, as it were, here the rhythms of nature are represented and transferred to cultural structures and rhythms.[30]

3. Thirdly, and to jump suddenly to the present day, there are the theories on the formation of stereotypes. These theories, which prove fruitful above all in analyzing image media, seem extremely important to me in the present context, because, unlike current semiotic theories, they always emphasize the process of the *formation* of stereotypes. Stereotypes are a prime example of the formation of a structure that none of those involved intend as such. Stereotypes do not emerge in the individual product, but in the larger area between the products; they form behind the backs of those involved, as a by-product of communication processes.

4. Fourthly there are theories on the formation of signifieds, which can be linked to the above-named stereotype theories. The formation of signifieds, which constitutes the basis of linguistic meaning, is probably the central enigma of language. For me it seems it can be answered only in the manner outlined here: by (wholly in line with the idea of inscription) assuming a regular connection between the discourse events and the linguistic-semantic structure, in such a way, for example, that the discourse events feed back into the linguistic-semantic structure as if as a 'memory.'[31]

5. Interestingly, people have repeatedly conceived semantics itself as a network.[32] This idea (and this is where we come full circle to an extent) is in turn based on the principles of the psychology of association; Saussure relates the observable quality of linguistic units (words) to 'associatively' link with others in the memory to that second chain that can be observed as a series/sequence of words, as text, in the outside world. Seen from this perspective, the current text in each case is a trace, which only re-instantiates that which is always already laid out in the associative-paradigmatic chains of the linguistic system; vice versa the linguistic system depends on these updates. Indeed, just as the collective memory of societies based on oral tradition would be lost without ritual re-enactment, the linguistic system and the associations that language regularly organizes would also flounder without the nurture they experience through the current utterance in each case.

6. If we conceive of the semantic system of language as a 'network;' a system of traces, the question arises as to how this 'inner' network behaves towards the external networks along which signs physically run.

As I mentioned, these contexts can only be suggested here. They mark points of transition to discourses that address specific media problems which are interesting and continue to be contested within my field. My theory is that the problem addressed here, i.e. the problem of priming and trace, actually offers a new and possibly unifying perspective on these issues.

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[28] Cf. König, Marie: Am Anfang der Kultur. Die Zeichensprache des frühen Menschen. Berlin: Mann 1973, pp. 64ff.

[29] The best known is the so-called 'Ishango bone' found in Uganda/Zaire, which is about 25,000 years old (http://en.wikipedia.org/wiki/Ishango_bone); a mammoth tusk was recently found in Russia's Ural Mountains near the Arctic Circle, also with regular notches, dated at 35,000-40,000 years old.

[30] Cf. Leroi-Gourhan, André: Gesture and Speech [1964]. Cambridge (MA): MIT Press 1993, p. 188.

[31] Cf. Winkler, Hartmut: Diskursökonomie. Frankfurt a. M.: Suhrkamp, pp. 110-130, https://homepages.uni-paderborn.de/winkler/Winkler--Diskursoekonomie.pdf.

[32] "The building blocks of language have by definition – and acquire by use – an indefinite variety of connections, associations, similarities, and affinities: A word is a bundle of connections with a label on it." (Miller, George A.: The Science of Words. New York: Scientific American Library 1991, p. 90; see also ibid., p. 103).

4. Quantity Transforms into Quality

In a third step I now wish to propose a conceptual framework into which the question of the trace, and more generally the link between quantities and structure generation, can potentially be integrated. And here I refer to a book that was relatively well known, but also harshly criticized, and with which most likely hardly anyone would work today, namely Engels' Dialectics of Nature.[33] The German edition from 1973 introduces the text as follows:

> "A fundamental work of Marxism, in which Friedrich Engels offers a dialectical-materialist generalization of the most important scientific achievements of the mid-19th century, advances materialist dialectics and critically analyses the metaphysical and idealist concepts in science."[34]

Engels' project is to show that dialectics is not solely the work of humankind, but (and this is new and initially completely counterintuitive) also holds in the sphere of nature. In other words, that nature too, and indeed nature itself and not just the knowledge of nature, develops in accordance with dialectical principles.

Firstly, Engels reconstructed the background, in terms of scientific history, of his theory: an increased focus on knowledge of nature from the second half of the 15th century; although initially in the sense of a rigid, supratemporal view of nature, still linked to metaphysical elements.[35] It was not until the late 18th century (with Kant, Caspar Friedrich Wolff) that nature was seen as something that had become, that had evolved by itself and according to its own principles. *Darwin* was no doubt a specific impetus for Engels.[36]

Engels saw the entire 19th century as characterized by the notion of history and development finding a foothold in ever more scientific fields; in his, Engels', day the paradigm had prevailed:

> "The new outlook on nature was complete in its main features: all rigidity was dissolved, all fixity dissipated, all particularity that had been regarded as eternal became transient, the whole of nature was shown as moving in eternal flux and cyclical course."[37]

Darwin is the shock that triggers the idea. Engels now reverses this shock; he sees the opportunity to forge a link between the social history of humankind (the classic field which he had addressed together with Marx), on the one hand, and natural history or nature theory, on the other.

In terms of Marxist theory (here we must agree with the editors) this project is by no means peripheral; they recall that Marxist social theory considers itself a *materialist* one, and in the field of society it certainly makes similar claims to validity and objectivity as do otherwise only the natural sciences in the field of knowledge of nature.

Before we smilingly reject this as hypertrophical, we should remember that a similar concept exists among modern thinkers too, such as Latour; although they do not share a comparable claim to objectivity, they do have in common the dissatisfaction with the division into an

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[33] Engels, Frederick: Dialectics of Nature [1873-1886]. In: Collected Works, vol. 25, New York: International Publishers, pp. 313-590.

[34] Engels, Friedrich: Dialektik der Natur. In: Karl Marx and Friedrich Engels Werke (MEW), vol. 20, Berlin: Dietz 1987, p. 646.

[35] Cf. Engels, Dialectics of Nature, op. cit. (FN 33), p. 321f.)

[36] Cf. ibid., p. 327.

[37] Ibid.

'objective' world of knowledge of nature and a second, social world, dependent on interpretation. Latour attempts, albeit in an entirely different field, to forge a similar link; and in Krämer (above) we saw that the concept of the trace also mediates between nature and culture.

And even in Engels the basic materialist intuition does not simply transform into determinism. Indeed, as society and nature become dependent on *development* in a radical way, an element of *unpredictability or openness* comes into the equation.

Secondly, it is important that Engels does not simply short circuit nature/natural science and society/social science. Instead, he finds the connection he seeks initially on the level of a highly abstract model; on the level of precisely the 'dialectics' that give the work – *Dialectics of Nature* – its title.

Indeed, Engels is forced to first develop a suitable concept of dialectics. The form of dialectics at hand, for instance in Hegel, is largely restricted to the human world and human understanding, at least from Engels' perspective, who does not recognize the advancement of the world spirit as an objective-metaphysical movement.[38]

Thus, if Engels wanted to show that a 'dialectic' prevailed in the processes of nature and in the advancement of natural history, he had to elaborate the concept itself, detach it from humans and translate it into a model that is perhaps also valid beyond human history.

A remark is in order

here. For naturally it is only and exclusively this abstraction that makes Engels' idea at all interesting in the present context. Given that I am not considering a knowledge of nature or the link he sought to forge here, I would now like exclusively to initially address the level of the model.

And this is precisely where Engels provides a concise, brilliantly clear, and almost irrefutably evident idea, one that seems to me highly useful in clarifying the question addressed here, and which I would like to introduce to the discussion. For Engels maintains, as one of the three laws of his dialectics, that there is a law-like connection between quantitative processes and the observable evolutionary leaps, the changes in the *structure,* the jump to new *qualities*.

Quantity, this is the theory for which the book became famous, *transforms into quality*.[39]

> "The law of the transformation of quantity into quality and vice versa. For our purpose, we can express this by saying that in nature, in a manner exactly fixed for each individual case, qualitative changes can only occur by the quantitative addition or quantitative subtraction of matter or motion (so-called energy). All qualitative differences in nature rest on differences of chemical composition or on different quantities or forms of motion (energy) or, as is almost always the case, on both. Hence it is impossible to alter the quality of a body without addition or subtraction of matter or motion, i.e., without quantitative alteration of the body concerned."[40]

Even if Engels maintains that this is 'even rather obvious,'[41] the notion presents several problems. For example, it is by no means certain whether the necessary condition of a quantitative

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[38] "All three [laws] are developed by Hegel in his idealist fashion as mere laws of thought. [...]. The mistake lies in the fact that these laws are foisted on nature and history as laws of thought, and not deduced from them." (Ibid., p. 356 (add. H. W.)).

[39] Ibid.

[40] Ibid.

[41] Ibid.

change includes one that is sufficient; whether the ‘chemistry,’ which he takes as his example, perhaps unlike energy does not always presuppose qualities; and whether these can in turn be completely traced back to quantities, etc. The subsequent debates, e.g. on the concept of emergence, which likewise seeks to grasp the transformation of quantity into quality, will continue to tussle with questions such as these.

Let us gloss over these problems (that is the privilege of such a rough approximation) for the time being. And the details of Engels’ argument, too, which by advancing through numerous scientific fields tends to undermine the credit he first acquired as a layman.[42] Models can, at the bright heights of the model-like, also be instructive when the objects selected do not want to submit to them. So let us jump to Engels’ strong summation:

> “Dialectics, so-called objective dialectics, prevails throughout nature, and so-called subjective dialectics, dialectical thought, is only the reflection of the motion through opposites which asserts itself everywhere in nature, and which by the continual conflict of the opposites and their final passage into one another, or into higher forms, determines the life of nature.”[43]

What is new in this second purpose is the moment of opposition, of *conflict*. The actual reference here, already established in the concept of dialectics as the interaction between thesis and antithesis, or empirically: thesis and objection, talk and backtalk, is a different one. Indeed, precisely at the moment of conflict Engels returns to Darwin's fundamental ideas:

> “[F]rom the simple cell onwards the theory of evolution demonstrates how each advance up to the most complicated plant on the one side, and up to man on the other, is effected by the continual conflict between heredity and adaptation. In this connection it becomes evident how little applicable to such forms of development are categories like ‘positive’ and ‘negative’: One can conceive of heredity as the positive, conservative side, adaptation as the negative side that continually destroys what has been inherited, but one can just as well take adaptation as the creative, active, positive activity, and heredity as the resisting, passive, negative activity. But just as in history progress makes its appearance as the negation of the existing state of things, so here also – on purely practical grounds – adaptation is better conceived as negative activity. In history, motion through opposites is most markedly exhibited in all critical epochs of the fore-most peoples. At such moments a people has only the choice between the two horns of a dilemma [...].”[44]

From today’s perspective the easy jump from natural to cultural history seems equally as problematic as, specifically, the short circuit between Darwin and politics (the quotation is specifically intended to show this). Yet again, that is not the focus of this essay. Anyone versed in cultural studies who fundamentally rejects such transitions is surely right; at the

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[42] “These achievements [of Herrn Dühring’s] have compelled me to follow him into a number of spheres in which I can move at best only in the capacity of a dilettante.” (Ibid., p. 337).

[43] Ibid., p. 492.

[44] Ibid., pp. 492f: Interesting in this context is a statement by Marx on Darwin (Letter to Engels dated 18.6.1862): “I’m amused that Darwin, at whom I’ve been taking another look, should say that he also applies the 'Malthusian’ theory to plants and animals, as though in Mr. Malthus’s case the whole thing didn't lie in its not being applied to plants and animals, but only – with its geometric progression – to humans as against plants and animals. It is remarkable how Darwin rediscovers, among the beasts and plants, the society of England with its division of labour, competition, opening up of new markets, ‘inventions’ and Malthusian ‘struggle for existence.’ It is Hobbes’ *bellum omnium contra omnes* and is reminiscent of Hegel’s *Phenomenology*, in which civil society figures as an ‘intellectual animal kingdom,’ whereas, in Darwin, the animal kingdom figures as civil society.” (Marx, Karl: Letter to Friedrich Engels in Manchester, 18. 6. 1862. In: Collected Works 1860-64, vol. 41, New York: International Publishers 1986, p. 380).

same time he/she should at least hold his/her peace until the range of the argument itself, the move into the *conflict*, is identifiable and has had the chance to possibly look for more adequate objects.

So let us stick to the consideration this side of nature, namely society. Is it not evident at least here that, for example in the mechanism of the market antagonism, conflict returns as a driving force and law of motion? Even if we possibly have to do without Darwin, it seems that up to Schumpeter's 'creative destruction' that which Engels describes, in a relatively terse manner, as a 'dialectics'[45] takes effect at least in the economy.

This may be motivation to also take Engels' last point into consideration. For the decisive step of his theorem has still to be taken. Indeed, the radicalness with which he foregrounds the dynamic element is quite stunning, to the extent that it undermines the stability of that which exists, the identity of the given things. *Identity*, as evident as it seems, is made dependent on the process of its creation.

> "Abstract identity ('a = a'; and negatively, 'a cannot be simultaneously equal and unequal to a') is likewise inapplicable in organic nature. The plant, the animal, every cell is at every moment of its life identical with itself and yet becoming distinct from itself, by absorption and excretion of substances, by respiration, by cell formation and death of cells, by the process of circulation taking place, in short, by a sum of incessant molecular changes which make up life and the sum – total of whose results is evident to our eyes in the phases of life – embryonic life, youth, sexual maturity, process of reproduction, old age, death. The further physiology develops, the more important for it become these incessant, infinitely small changes, and hence the more important for it also the consideration of difference within identity, and the old abstract formal identity standpoint, that an organic being is to be treated as something simply identical with itself, as something constant, becomes out of date."[46]

The argument perhaps nonetheless becomes clear even though formulated in biological terms. That which appears as an existing structure, as stable and identical to itself, is made dependent on the process of its creation and (Darwin's influence again) on the environment in which it must through ally dissolves in this process.

And this seems to me to be the key thrust of Engels' essay: *It concerns a model of structural emergence*. The transformation from quantity into quality binds structure back to process, stable to liquid, and seemingly irreducible qualities to something gradable and quantitative. The moment of conflict that Engels takes from dialectics, and for which Darwin's struggle for existence among species is perhaps just a kind of ostensible reference, seeks to pinpoint the engine, the driving force behind the process.

Thirdly, the seemingly stable identity of present things is liquefied not simply into (contingent) history (which would perhaps find wider approval), but into circulation and process. Methodologically speaking, it is important that Engels was focusing on a kind of mechanism, an abstract law behind the concrete phenomena. And it is only abstraction that enables him to transition from objects of nature to those of culture (or actually vice versa, insofar as dialectics would surely be less contested in the field of culture). Simultaneously, this is no doubt the most disputable point.

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[45] I myself presented this argument in Winkler, Hartmut : Netzbildung durch antagonistisches Handeln. Bietet die Ökonomie ein Modell für ein Verständnis der Medien? In: Adelman, Ralf et al. (eds.): Ökonomien des Medialen: Tausch, Wert und Zirkulation in den Medien- und Kulturwissenschaften. Bielefeld: Transcript 2006, pp. 47-62 (https://homepages.uni-paderbom.de/winkler/Winkler--Netzbildung-durch-antagonistisches-Handeln.pdf).

[46] Engels, Dialectics of Nature, op. cit. (FN 33), p. 495 (inverted commas within the parentheses added, H.W.).

And finally, I find it important what has already been said, namely that we are not concerned here with a deterministic model. Rather, Engels emphasizes that what he describes is always and necessarily unpredictable and open as far as the outcome is concerned. Here Engels anticipates in a certain way the Poststructuralists' objection to the Structuralist concept of structure; and perhaps it is no coincidence that, at a remove from dialectics, conflict and opposition also reappear in Lyotard's work.[47]

5. Conclusion

So, what is the result of the above considerations? Is addressing such heterogeneous models, and the jump from priming and trace, which are perhaps metaphorical, but at least clear, to Engels not too far, too risky? Essentially, I want to show what Engels actually gains with his abstraction.

That sheep leave behind traces would surely be just as incontestable as the fact that the latter overlap, and form patterns as they do so. At best, the status of the patterns themselves could be contested, and that is what interests me. Only when I understand that it is new qualities that emerge in the formation of patterns, only when I reverse the perspective and wonder, starting with the patterns, about the mechanisms of their creation, when I am no longer satisfied with the information that it was sheep that brought the patterns into the world as a secondary effect, only then do Engels and his transformation of quantity into quality become interesting.

The crucial point is that ultimately Engels does not make the patterns dependent on the sheep, but the sheep dependent on the patterns. If the identity of the nodes in the network (and the actors in the network) is not already existent, but itself an effect of the pattern creation (as in Engels/Darwin the identity of the species is an effect of their interaction with the ecological niche) then the metaphor of the sheep that leave traces is blown wide open. In my view this is precisely where the question addressed here begins.

[47] Cf. Lyotard, Jean-François: The Differend. Phrases in Dispute [1983]. Minneapolis: University of Minnesota Press 1988.

7 The Computer – A Child of Telegraphy

1. Intro

For about 40 years, computers were stand-alone machines, enclosed in their cases, monads, a tool. Then came the cables, the ARPA and the Internet, and computers began to 'communicate'; and since then the computer has been a medium.

This is more or less how it reads in the vast majority of accounts of media history. Possibly, however, this view is wrong. For one thing, the computer has always been a medium, insofar as it manipulates *symbols*, not matter and energy. But above all for a second and rather unsuspected reason: As I will show in the following, the computer itself is a legitimate and direct offspring of telegraphy. The logic of telegraphy has inscribed itself into its inner logic and has determined its construction from the ground up. Accordingly, my proposal is to reverse this perspective: It is not stand-alone computers that make contact with each other, but with the cabling the computer – speaking riskily in terms of 'media-ontology' – instead circles back to itself, or at least to its own origins.

Whether the outlined view is tenable makes a difference not only for the positioning of computers in media history. At which point what kind of media-historical lines intersect is a problem for theory as well, if theory is to decipher the internal logic of the individual media and their precarious interrelation. The outlined thesis promises much on this front: Since telegraphy is a macrostructure distributed over large geographical spaces, while the computer is a microstructure, a local arrangement of hardware components enclosed in a case, the thesis seems capable of building an unsuspected bridge between macro and micro. And if telegraphy is designated as a machine for *transmitting* data, but computers are about *processing*, a second unsuspected bridge emerges, now between two central media functions. From a theoretical standpoint, I think this is interesting.

In the following, the thesis will be made plausible step by step, both with regard to certain technical modes of operation and in a broader historical perspective. I think that my thesis can even contribute something to the history of telegraphy. As comprehensively as it has been reviewed,[2] it undeniably has blind spots, which, however, only become clear when, starting from the experience of the computer, one once again inquires backwards into the space of telegraphy.

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[1] Translated from the German book: Winkler, Hartmut: Prozessieren [Processing] – Die dritte, vernachlässigte Medienfunktion. Paderborn: Fink: 2015, chapter 3.3, pp. 277-296, the German text is available online: http://homepages.uni-paderborn.de/winkler/Winkler--Prozessieren.pdf.

[2] The historiography ranges from period accounts to the present; examples include:

2. Internal Telegraphy

As a first step, I would like to come back to certain points I worked out in my book 'Prozessieren.'[3] One of the conclusions there was that one has to understand the processes in the computer itself as a kind of 'telegraphy.'

Firstly, within the computer, data is constantly being sent from A to B, from the hard disk to the processor, from there to the screen or to one of the ports... Every module in the computer has an *address* that allows data to be passed to it; the main memory itself is divided into 'addresses,' every data block is, like a postal package, provided with an address, and the processor spends a good part of its time not managing data, but addresses. All this is a logic of the post, of delivery, of transmission. And since it is the transmission of writing, it is a logic of telegraphy. This first parallel would hardly be disputable; but does it really get to the heart of how computers work?

Surprisingly, the same is true on a more fundamental level for the processor itself. For in the micrology of the processor, this was also a result of my consideration above, data is not actually 'processed,' i.e. transformed or changed in its substance, but all processes are dissolved into individual steps of *writing* and *reading*.

Processors consist of huge networks of switches that are set anew for each processing step and whose logical structure determines what, once the work cycle is completed, will be present at the output as the result of the calculation. During the work cycle itself, the data is passed – quasi 'live' – through the switching networks; again a process of transmission. Like the transmission across geographical distance, it takes time.

And it is volatile, or better: it *would be* volatile, if the destination point of the transfer were not always a *memory* into which the result is written. And in the same way, data is read from memories. 'Writing,' then, connects a process of transmission with the inscription in a memory; 'reading' connects the seeking and reading of a memory with a transmission.

The vocabulary already indicates: Telegraphy – systematically considered – does exactly the same. Here, too, it is a matter of writing and reading, transmitting and storing; for telegraphy, too, is by no means a technique of transmission alone, but is necessarily tied to the existence of storage. At the beginning of its development, it was human operators who mediated between transmission and storage; telegraph operators read a paper document (i.e., a memory) to feed the transmission apparatus with texts, and at the destination other operators wrote down the messages. Both functions were soon taken over by machinery: In 1836, the telegraph was cou-

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- Schellen, Heinrich: Der elektromagnetische Telegraph in den Hauptstadien seiner Entwicklung und in seiner gegenwärtigen Ausbildung und Anwendung. Braunschweig: Vieweg 1854; available on Google Books: http://books.google.com/books?id=XecOAAAAYAAJ.

- Knies, Karl: Der Telegraph als Verkehrsmittel. Über den Nachrichtenverkehr überhaupt [1857]. Munich 1996.
- Zetzsche, Karl Eduard: Geschichte der elektrischen Telegraphie [1877]. Charleston, SC: Nabu Press 2010.
- Beauchamp, Ken: A History of Telegraphy: Its Technology and Applications. London 2001.
- Standage, Tom: The Victorian Internet. The Remarkable Story of the Telegraph and the Nineteenth Century's On-line Pioneers. New York: Berkeley 1998.

In addition, some texts use telegraphy as a stimulus for theoretical thought:

- Peters, John: Speaking into the Air. A History of the Idea of Communication [1999]. Chicago, IL/London: University of Chicago Press 2000 or
- Czitrom, Daniel J.: Media and the American Mind. From Morse to McLuhan. Chapel Hill, NC: University of North Carolina Press 1984.

Excellent also the keyword 'Telegraph' in: Lueger, Otto (ed.): Lexikon der gesamten Technik. Stuttgart/Leipzig: DVA 1904; available online via: http://www.zeno.org/Lueger-1904/A/Telegraph+%5B1%5D, 12/1/2010.

[3] Winkler, Prozessieren, op. cit.; see chapter '3.2 – What Does a Processor Do?', pp. 255-276.

pled with a writing mechanism that recorded the incoming signal on a paper tape;[4] starting in 1858, punched tape was used to mechanize the input as well.[5]

So the second parallel would be this oscillation between storing and transmitting. It is important to note here that both cases involve purely mechanical processes. Even if in the case of telegraphy humans are involved, no dimension is addressed that would be strictly bound to 'humans' and their specific abilities; telegraphy and computer work only with signals, even if these are recoded several times; understanding, meaning, 'semantics' or the like do not initially play a role.

Another parallel is the fact that in both cases the signals are processed in a strictly linear way. In the case of telegraphy, this is due to the internal logic of transmission; and on several levels: 'Linear,' first of all, are the cables themselves, which cut through the landscape. Their length is determined by the geographical distances they bridge. To save copper, they are made as thin as technically possible;[6] cables (and traffic routes, canals, channels) are always 'narrow.'

And 'linear' is secondly the sequence of the signs. The model here is writing, which arranges its signs in lines, and oral language, which arranges the articulated sounds along the time axis. Flusser has worked out most clearly that this linearity is a particularly strict system of order.[7]

Technically, however, it is quite difficult to transmit characters via a cable, because the 26 characters of the alphabet still demand a certain 'width' of the channel. Here, media history has found several possibilities: One can use different signals, i.e. high pitch for an 'E' and low pitch for an 'M';[8] which has the disadvantage that the transmitting and receiving technology must be able to identify these different signals reliably. Or one can use several channels in parallel to transmit a single character,[9] which is not very advisable in terms of resources. Classical telegraphy has therefore developed a much more radical solution. It gets by with only one cable and only one type of signal.

The technical facts are well known: The most important invention concerning telegraphy was the Morse code of 1844, because it slimmed down the signals to the 'narrowest' variant; 'power on' and 'power off'; an anticipation of the digital, even if Morse knows three characters ('long,' 'short' and 'pause'), and not only two characters like the computer. The problem is that even a single character of written language must be broken down into a *sequence of pulses* that are sent *successively* through the cable. Thus, a 'Q' in Morse code is encoded in four characters – long, long, short, long – and the representation of a letter in the computer requires 8 bits. So in a

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[4] The most famous typewriter telegraph was developed by Morse.

[5] Charles Wheatstone (o. A.: Morse telegraph page DK5KE, http://www.qsl.net/dk5ke/telegraf.html).

[6] The thinner the cable, the greater their attenuation due to increased electrical resistance.

[7] Flusser, Vilém: Into the universe of technical images [1985]. Minneapolis: University of Minnesota Press 2011, pp. 5ff.

[8] An example would be the dial tone used in the analog telephone network, which assigns different pitches to each of the digits. This so-called multi-frequency dialing method was developed by Bell Telephone Laboratories in 1955.

[9] This begins in antiquity, where several light signs were used side by side to represent a single sign and continues in the history of electrical telegraphy: "Five years earlier, when Wheatstone took out a patent on his first six-wire needle telegraph, in October 1832, Morse, on a voyage from Europe to America on the packet boat Sully, first had the idea of using the properties of an electro-magnet for telegraphy. Morse's first designs had to be abandoned as impractical; he tried to produce the 26 letters of the alphabet successively through 26, then through 6 – 3 conducting wires". (Schellen, op. cit., p. 149 (transl. H. W.)).

sense, what is not available in terms of the width of the channel is pulled into temporal length. *Space is recoded into time.*[10]

Obviously, then, it is the logic of transmission itself that forces a linear arrangement of the signs, and more precisely: a specific compulsion to *economy*. The signs nestle up against the cables, at the price that the space saved in successive transmissions must be paid for with *time.*

In the case of the computer, strict linearity is adopted in the so-called 'Von Neumann' architecture. The fact that a computer proceeds step by step, and – at least on the level of principle – executes only a single step at any given time,[11] translates the logic of linearity into the operational. And here, too, the price is the time that passes. All this should make clear that the processes inside the computer resemble telegraphy. Taken by itself, however, the argument could prove little more than a structural analogy between macro and micro. To show that the connections are in fact broader, it makes sense now to move from micro to macro; from computer to telegraphy.

3. Nodes

Telegraphy probably represents the most significant turning point in the history of media, because it decoupled the transmission of messages from physical transport for the first time. This applies to the torch telegraphs of antiquity and Chappe's optical telegraph lines;[12] above all, however, to the electric telegraph, which came into the world with Weber and Gauss in 1833. It transmits its messages at nearly the speed of light, revolutionizing the entire space-time structure that governs the flow of information. This profound change was recognized early on.[13]

But talking about 'speed of light,' simultaneity etc. is a gross abstraction. It assumes that it is merely about physics and about physical transit times; and as soon as one takes a closer look at the transmission of messages, such idealizations dissolve. Indeed, much more interesting than the physical transit time is the empirical time it takes for the message to reach its actual addressee; and this depends on the construction of the network as a whole, on how many nodes are traversed, on how those nodes are organized, and on the processes of translation required

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[10] The connection had already been recognized at the beginning of the 20th century (cf. e.g. Riepl, Wolfgang: Das Nachrichtenwesen des Altertums. Mit besonderer Rücksicht auf die Römer. Leipzig/Berlin 1913, pp. 100ff).

[11] Cf. again the chapter 'What does a processor do?' in my book.

[12] On the news systems of antiquity, see:
- Riepl, Das Nachrichtenwesen des Altertums, op. cit.;
- Kolb, Anne: Transport und Nachrichtentransfer im Römischen Reich. Berlin: Akademie 2001.
On the optical telegraphs:
- Beyrer, Klaus; Mathis, Birgit-Susann (eds.): So weit das Auge reicht. Die Geschichte der optischen Telegrafie. Frankfurt am Main: Museum für Post und Kommunikation 1995.

[13] "And Science proclaimed, from shore to shore, / That Time and Space ruled man no more." (From the poem 'The Victory' by Rossiter Johnson, written in 1872 in honor of Samuel Morse. Quoted from: Field, Cyrus W.: Laying Of The Atlantic Cable [1866], http://history-world.org/Laying%20Of%20The%20Atlantic%20Cable.htm; the poem is quoted also in Standage, op. cit. p. 22).
Or: "[T]he natural barriers and obstacles of transport lie in resistances which we can summarize with the words: time and space, i.e. precisely in the conditions in which the earthly, finite nature of human life in general emerges. Every true progress in transportation is therefore always at the same time a successful act of man's inherent restless striving to reduce the barriers of his finite nature, to overcome the time and space in which he must live." "In the nature of those resistances which transportation must overcome, it is of profound significance that heaviness is inherent in persons and material goods as bodies, but not in messages as such. [...] In the transportation of messages, at most the nature of the vehicle comes into consideration, the weight of the packaging in which they are sent over." "The goal was achieved with the invention of electric telegraphy." (Knies, Der Telegraph als Verkehrsmittel [1857], op. cit., pp. 4, 6, 18 (transl. H. W.)).

for message transmission. It is amazing how little the media-historical accounts of telegraphy say about this – with the exception of Standage, who undertakes an actual *logistical* reconstruction in one chapter of his rather popular book.[14]

Electricity does not actually rule at the nodes, it is people who hold that position. They have different tasks: They 1.) receive the message – mostly in written form. Depending on the addressee, they 2.) select the telegraph line through which the message is to be sent. This function is notoriously neglected; in fact, however, it is crucial, because only the availability of different lines makes the network a network. They check 3.) whether the line in question is free; then 4.) the message is to be encoded; i.e., the official reads the written text and passes it on to the apparatus with the Morse key. Here, the message is *translated* from the code of writing, which is oriented to human use, into a second one, which follows the necessities of the new transmission technology. This code can be mastered by humans, but it requires a specialization that goes beyond general literacy. This process of translation is of central importance. It mediates between the human and the machine world, and it will become – I anticipate here – the gateway for much more far-reaching automation processes.

At the receiving end, a second official will 5.) translate the message back, either by listening to it, or by reading the log strip. The result is again a written text. This is 6.) delivered to the addressee, in the form of an expedited letter. Here, at the destination, locally, the outdated logic of physical transport by mail still reigns.

This representation, however, is also an idealization. It assumes that there is a direct line between sender and receiver; in fact, however, the telegrams had to be forwarded via intermediate stations:

> "The problem arose because most telegraph messages were not transmitted directly from the telegraph office nearest the sender to the one nearest the recipient, but passed via one or more intermediate points *where they were retranscribed and retransmitted each time.*"[15]

If this is taken into account, a much more complex picture emerges; the processes of encoding and decoding multiply, more and more people and more and more translations are involved, and the logic of addressing becomes more complex.

In fact, however, these processes are structurally highly relevant. For example, Standage describes – a very good example – that around 1850 the forwarding of telegrams between the local telegraph stations within London was so costly and time-consuming that they were sent in written form via messengers[16] and then via specially installed pneumatic tube systems.[17]

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[14] Standage, op. cit., pp. 92ff.

[15] Ibid, p. 92f. (emphas. H. W.).

[16] "At busy times, messages might be coming into a particular telegraph office faster than that office could handle them. Instead of being immediately retransmitted, the messages, transcribed on slips of paper, literally started to pile up. [...] Some telegraph companies tried employing additional messenger boys to carry bundles of messages along busy routes from one telegraph station to another - a distance of only a few hundred yards in many cases. *With enough messages in a bundle, this method was quicker than retelegraphing them.*" (Ibid., p. 93 (emph. H. W.)).

[17] "Josiah Latimer Clark [...] proposed a steam-powered pneumatic tube system to carry telegraph forms the short distance from the Stock Exchange to the main telegraph office. [...] Clark first tested the idea in 1853, and by 1854 an airtight tube an inch and a half in diameter had been laid underground between the two telegraph stations. It was capable of carrying up to five messages at once, written on telegraph forms". "By 1865, the increase in traffic had led the Electric Telegraph Company to extend its London tube network and install tube systems in Liverpool. Birmingham, and Manchester. Similar systems were initiated in Berlin in 1865 and Paris in 1866." (Ibid., pp. 94-96).

Locally, therefore, physical transport was *faster* than transmission 'at the speed of light'; for the simple reason that a large number of telegrams could be physically transported at the same time, thus avoiding the telegraphic logic of linear succession.

It is also important that various *media breaks* occur at the nodes. The 'translation' by human operators becomes necessary because the medium is changed: from paper to the electrical signal and vice versa; or from the alphabetic code of writing to Morse code and back. And the same is true for addressing: In the days of telegraphy, only humans were capable of ensuring correct addressing. Standage writes:

> "Each of these offices was a vast information processing center – a hive of activity surrounded by a cat's cradle of telegraph wires, filled with pneumatic tubes. And staffed by hundreds of people [...].
>
> The layout of a major telegraph office was carefully organized to make the flow of information as efficient as possible. Typically, pneumatic tube and telegraph links to offices within the same city would be grouped on one floor of the building, and telegraph wires carrying messages to and from distant towns and cities would be located on another floor. Grouping lines in this way meant that additional instruments and operators could easily be assigned to particularly busy routes when necessary. International connections, if any, were also grouped.
>
> Incoming messages arriving by wire or by tube were taken to sorting tables on each floor and forwarded as appropriate over the building's internal pneumatic tube system for retransmission. In 1875, the Central Telegraph Office in London, for example, housed 450 telegraph instruments on three floors, linked by sixty-eight internal pneumatic tubes. The main office in New York, at 195 Broadway, had pneumatic tubes linking its floors but also employed 'check-girls' to deliver messages within its vast operating rooms. Major telegraph offices also had a pressroom, a doctor's office, a maintenance workshop, separate male and female dining rooms, a vast collection of batteries in the basement to provide electrical power for the telegraphic instruments, and steam engines to power the pneumatic tubes. Operators working in shifts ensured that the whole system operated around the clock.
>
> Consider, for example, the path of a message from Clerkenwell in London to Birmingham. After being handed in at the Clerkenwell Office, the telegraph form would be forwarded to the Central Telegraph Office by pneumatic tube, where it would arrive on the 'Metropolitan' floor handling messages to and from addresses within London. On the sorting table it would be identified as a message requiring retransmission to another city and would be passed by internal pneumatic tube to the 'Provincial' floor for transmission to Birmingham by intercity telegraph. Once it had been received and retranscribed in Birmingham, the message would be sent by pneumatic tube to the telegraph office nearest the recipient and then delivered by messenger."[18]

It should be noted, therefore, that the laws governing the nodes are completely different from those that are generally attributed to telegraphy. The lines themselves are electrical, state-of-the-art and fast; at the node, the new medium must rely on traditional media; here, humans rule as translators, using physical sign carriers and the physical transport of signs. My proposal, then, is to understand telegraphy no longer from the line, but now from the nodes.

[18] Ibid, p. 98f.

4. Automation of the Nodes

It is precisely at this point that the position of the computer in the history of media becomes clear: It is not the individual computer that establishes contact – via telecommunications – with other individual machines, but *with the computer the gaps in the network are grown over, the network conquers its nodes and subjects them to its technical law.*

This is the shift in perspective that my text wants to propose. And there are some indications that support this interpretation. The simplest ones are found within the history of technology itself. The first function to be automated, as already said, was the automatic transcription of the signal onto paper tape. This is found with Morse, unlike his technical predecessors, right at the beginning, that is, as early as 1836. In substance, this means a fusion between transmitting and storing. It had the important consequence that a time-critical task (listening and transcoding) was no longer time-critical. The memory, the paper tape, liberated from the pressure of time and made it possible to streamline the work. The first media break separating transmission and storage was overcome, the technical process chain grew by one link and incorporated the storage function.

The second step was to organize the input via punched tape.[19] Here, too, it is a question of liberating the process from the constraints of time: The production of the punched tape is separated from the input into the transmission channel, so that the input can run at the speed optimal for the technology, which also means a streamlining effect and better utilization of the expensive line. And again, the process chain incorporates a new element; and even more clearly than in the case of transcription on punched tape, insofar as the punched tape involves *machine-readable* characters. The logic of machine readability will have to be examined individually, but it is obvious that the process chain itself develops a logic of its own, and an economic *pressure* that does not seem to tolerate media breaks and gradually pushes them out of the chain.

The code break between the Morse and letter/written alphabet, however, is maintained at this stage. It will only fall with the type printing telegraphs, whose history begins in 1855 with Hughes's telegraph, but which will not become established as the 'Teletype' until the 1930s.[20] On the transmitter side, typewriter telegraphs had letter keys so that telegrams could now be entered in plain text. A complicated electromechanical system converted the characters for transmission into pulses;[21] on the receiver side, the device output plain text.[22] Encoding and decoding were now carried out by the apparatus. Morse code was obsolete, and the process

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[19] Developed in 1858 by Charles Wheatstone (http://www.qsl.net/dk5ke/telegraf.htm).
"Instead of manual operation, the machine telegraphs or high-speed telegraphs use machine operation to transmit the electricity for signaling. The telegrams are first punched into a paper strip in special perforated letters, and the strip prepared in this way is then driven at great speed through the transmitter apparatus." (Lueger [1904], op. cit. (transl. H. W.)).

[20] Cf. ibid. and:
- Weiß, J. J.: Der Typendruck-Telegraph. Winterthur: Hegner 1854, pp. 19ff., online: http://books.google.com,
- Schellen, op. cit., pp. 189ff.

[21] With Hughes, this conversion was time-dependent, so two rotating disks (!) in the transmitter and receiver had to be synchronized again and again. This electromechanical system was considerably more susceptible to failure than Morse's system; this is probably one of the reasons why Morse code was able to last into the Second World War.

[22] For individual machines even with a kind of phototypesetting: "The Buckingham and Siemens & Halske telegraphs directly provide type printing, the former in sheet form, the latter on light-sensitive paper strips through the photographic effect of an electric spark [!]; the last version of the Pollak & Virág's apparatus provides a kind of Latin cursive writing; it is written on light-sensitive paper by a beam of light passed through two oscillating mirrors each connected to a telephone diaphragm." (Meyers Konversationslexikon, keyword: Telegraph: http://de.academic.ru/dic.nsf/meyers/139090/Telegraph (transl. and emph. H. W.)); see also Lueger, op. cit.).

chain was two links longer; the front end of the apparatus had moved toward the human and presented an interface in the familiar alphabetic code.[23]

Addressing also proved stubborn as far as automation was concerned. Telegraphy was switched manually; it was not until 1935 that teletypes were equipped with a dial,[24] thus adopting a technology that had been gradually introduced into the telephone network since 1908.[25] With the automatic dialing system, this link in the process chain was also passed on to the machine world.

The latest step in this development, this is my argument, is the computer. As soon as it enters the node, the process chain is finally closed; data and addresses are uniformly formatted, their processing and transmission completely automated; the computer's switching networks can transform the message as well as regulate the switching through to addresses.

And more: It is basically the same logic that organizes the addresses inside the computer case (the control of the components, main memory addresses, ports...) and the geographical addresses outside. The address determines which line is put through; and the case is no more than a 'horizon.' The ports (the connectors) perforate the horizon and the case and connect the inside with the outside.

5. Subject Theory

My proposal to start not from the individual computer but from the network, and to conceive the computer as the machine that enters and closes the gap at the network node, finds a parallel completely outside of technology, in subject theory. Here it was Flusser who proposed the same change of perspective. While the classical subject of the bourgeois Enlightenment saw itself – most clearly in the aesthetics of the genius – as the originator and source of communication processes, and had the illusion of sovereign control over them, Flusser makes it clear that the subject is no more than a node, a kind of relay through which communication passes:

> "The central problem to be discussed with regard to a dialogic society is that of generating information. It is this problem that was called 'creativity' in former times. How do we get information that is unpredictable and improbable? [...] Information is a synthesis of prior information [...]. People are not creators but players with prior information [...]. [T]he so-called 'I' forms a nexus point in a web comprising streams of information in dialogue, storing information that has passed through. This is in fact the case for both inherited information and for the overwhelming majority of that which is acquired. At this nexus point, unpredictable, improbable computations occur, new information."[26]

Subsequently, the subject owes everything it is to communication, the network and the media.

> "If one regards the 'I' as a nexus point in a dialogical web, society necessarily appears as a superbrain made up of individual brains. And the telematic society would distin-

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[23] The development of the typewriter telegraph led in 1933 to the *teletype*, an exceptionally widespread and robust system used primarily in the industry, by public authorities and the press. The teletype uses the 'International Telegraph Alphabet,' a 5-bit digital code, for transmission. Trial operation in Germany began in 1926; since the eighties, the medium has lost importance, and in 2007 the service was discontinued in Germany.

[24] Cf: Wagner, Oskar A.: Vom Drucktelegraphen zum Telex-Netz. In: PCNews, No. 74, 8/20/2001, http://pcnews.at/?Id=1089&Type=Htm.
Image: http://upload.wikimedia.org/wikipedia/commons/0/0b/Telex.jpg.

[25] "1908, first Telephone dial system local network Hildesheim in Germany." (Anonymous: Geschichte der Telekommunikation von 1833 bis 1944, http://waehlamt.at/nte2/history/g1-frameset.htm). Hand switching operated by German Telekom was not irrevocably terminated until 2003.

[26] Flusser, Into the Universe of Technical Images, op. cit., pp. 87-91.

> guish itself from earlier societies only insofar as its cerebral-net character has become conscious, enabling us to start consciously manipulating the net structure."[27]

The metaphor of a social 'superbrain' is certainly debatable. The figure of thinking of the subject no longer as autonomous but now as dependent, as a relay, is one that Flusser derives from the French subject-critical philosophy of the 1960s, which he attempts – one might say – to ground in a media-materialist way.

For Flusser, this change of perspective has several consequences: Thus, communication is no longer a secondary function, added quasi luxuriously to a self-referential and self-sufficient subject, but primary in every sense.[28] Secondly, for its suchness, its identity, the node is made completely dependent on the communications that have passed through it and given it its form. Communication, its rules and requirements, structure the node. This motif, too, comes from French subject philosophy, more precisely from the arguments concerning the 'linguistic turn,' the insight into the central role of language, which constitutes people as linguistic beings, and at the same time subjects them to language.

But how can this parallel come about? Isn't it about technology in one case and about human beings in the other? Considering that the subject theory tries to clarify the position of humans, but the argument here aims at the nodes of telegraphy, and the role of computers in these nodes? And more: Was it not said that the development of technology increasingly *closes* the process chain, which is to say: *displaces* the acting humans from the process chains?

It will be necessary to realize that both Flusser and subject theory already frame their question with media in mind. If it is the networks of communication and language – i.e. cultural techniques – that define the position of the subject, then subjects and technique are not separated by an abyss. The assertion is accordingly not one of substitution. The thesis would rather be that the network precedes the nodes, that there are *laws* in the space of communication that apply to machines as well as to people.

6. Machine Readability

Let's return to the level of technology. The crucial point of the punched tape, as has been said, is that its writing is readable by machines. Now, machine readability is indeed a linchpin for the argument pursued here – and for computers and telecommunication in general; and it has been almost universally passed over by media studies as well as by computer science.[29]

Machine readability initially means that a piece of information can be passed from one device to another. Wikipedia defines it rather carelessly:

> "Machine-readable medium: In telecommunication, a machine readable medium (automated data medium) is a medium capable of storing data in a machine-readable format that can be accessed by an automated sensing device and capable of being turned into (practically in every case) some form of binary."[30]

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[27] Ibid, p. 92.

[28] Here, despite all differences, we can find a parallel to Luhmann, who bids farewell to the acting subject – until then certainly a cornerstone of sociology – and declares 'communications' to be the basic building block of society.

[29] To my knowledge, there is neither a monograph dedicated to this topic, nor does the keyword appear – with the exception of the English edition of Wikipedia – in the relevant encyclopedias. The same is true for most of the introductions to computer engineering. At the same time, the adjective is frequently used, e.g. in the context of RFID or barcode, as if it were unnecessary to define the term...

[30] http://en.wikipedia.org/wiki/Machine-readable.

Machine readability is subject to various technical conditions: There must be a technical carrier that can guarantee the identity and stability of the signal; this applies to stored signals as well as to signals processed in real time. The signal must remain within predefined technical limits, which requires strict standardization;[31] the signal must be unambiguous as a signal; and there must be a code that is shared by the transmitting and receiving devices. In addition, a certain complexity of the used code is needed, insofar as one would not speak of machine readability for individual switching pulses with which one device controls another.

Further, there is an implicit reference to the code of writing, insofar as machine readability requires distinct characters: A fax machine, to give a counterexample, controls the receiving device via telecommunications by means of complex control signals; since it is an *image* that is transmitted, and the machine does not know the transmitted letters, it is not a case of machine readability; cell phone signals are machine-readable only at the level of digitally transmitted bits, but not in terms of linguistic articulation; telegraph and teletype, and even a loom controlled by punched cards, process machine-readable data.

Machine readability belongs to the problem area of *technical reproduction*.[32] And finally, machine readability concerns only the level of the signal, thus it does not imply the dimension of meaning. 'Reading' and 'readability' are metaphors in this respect. Machine readability is the prerequisite for interconnecting the devices of telegraphy into a 'process chain' in the first place. This is particularly evident in those nodes that serve as hubs for forwarding the telegrams. Originally, as mentioned, the text had to be written down, re-transcribed and then forwarded each time. It was not until the high-speed telegraphs of Murray [1899] and Creed [1902] that a change was made here, in that the same punched stripes as were needed for the input could now also *be output* automatically at the destination: "The recording stripe accurately reproduces the punched writing of the transmitting stripe; *in transit, it can therefore be reused immediately as a transmitting stripe."*[33]

This was the decisive step towards the *continuous flow of data*, towards which telegraphy – as towards an implicit telos – is continuously heading. And now I come back to my thesis: Only machine readability makes it possible to overcome the media and code breaks that had characterized the nodes of telegraphy until then, and to displace people from the nodes step by step. With the computer, this development comes to an end.

7. Conclusion

The computer, as I have written elsewhere,[34] is a medium insofar as it draws the most radical consequence from the logic of telecommunications: The computer derives its peculiarity from the fact that it fuses the space of telecommunication with the inner workings of the machine.

Media history can be understood as a process of increasing immaterialization. If at the beginning communication concerns those that are present, then with pictures, monuments and writing, the signs finally detach themselves from the bodies. What is striking here is that the sign carriers, the signifiers, become smaller and lighter. From the monumental inscriptions to the clay tablets to the comparatively light paper, a process takes place that consumes the materiality

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[31] ... if a certain electrical impulse is expected, a tenfold stronger one would certainly be problematic ...

[32] It would certainly be interesting to flesh out that connection.

[33] Lueger, op. cit. (transl. and emphasis H. W.).

[34] Cf: Winkler, Hartmut: Medium Computer. Zehn populäre Thesen zum Thema und warum sie möglicherweise falsch sind. In: Engell, Lorenz; Neitzel, Britta (eds.): Das Gesicht der Welt. Medien in der digitalen Kultur. Munich 2004, pp. 203-213, the first part of my summation is preformulated there.

of the sign carrier (the substance of the signifiers) step by step. The motor of this development, of course, is the transport of signs: Signs want to circulate, and this is all the more possible if the inertia of mass they have to overcome gradually decreases.

The crucial point is reached with telegraphy: In 1840, signs were detached from physical transport and could then be sent 'immaterially' through wires as well. All electronic media expand this possibility.

The computer now, this is the crux of my argument, draws the conclusion from this process. It establishes a continuum between the modes of transmission, the modes of storage, and the possibility to process/permutate signifiers. In all other media, these modes fall far apart; books are produced by means other than distribution and storage, and even a CD must still be physically transported if it is to circulate. Only the computer creates a continuous process chain here, similar to the way the assembly line in industry links the heterogeneous individual processes into a chain.[35] This is the reason why *machine readability* had to be emphasized. Only when the characters are machine-readable does this new quality occur.

So it is the logic of telecommunication – the logic of transport and sign circulation – that gains power here also over the inner structure of the machine. Inside the computer, telegraphy rules: Signifiers are sent back and forth, stored and processed/permutated. In this way, the initial thesis also gains plausibility: Computers are not a medium because they are wired, but the other way around: Because it is a child of telegraphy, the computer forces wiring. It forces to connect its inner telegraphy to the outer telegraphy; the space *between* the digital single machines and the space *within* these single machines are structurally always already similar. Confined to the flow of signifiers, it is really about transmitting, storing, and processing. And everything new that the computer offers as a *medium* lies on this terrain. Sign transport and telecommunication put their stamp on the signs themselves. The computer emerges as a result of telegraphy; as a medium, a node in the network of sign circulation.

The second idea of my summation concerns the distinction between micro and macro. If the computer is a local microstructure, enclosed in a case, and telegraphy is a geographically distributed macrostructure, then my thesis implies that there is a double connection between the two: On the one hand, a *structural homology*, insofar as the same basic functions occur at both levels – transmitting, storing; reading, writing; addressing... –, with the consequence that one can describe micro and macro in terms that are compatible. And secondly, beyond this correspondence, the computer creates actual integration. Since the Internet has been established – and that means: since the computer has conquered the network nodes and taken its position there – it no longer makes a substantial difference whether the processor sends data to the local hard disk or to a server on the other side of the globe. The threshold between micro and macro has been leveled; both are *functionally integrated*.

Finally, my last point concerns addresses. If transmission and storage are the central functions, inside the computer as well as on the macro level of telegraphy, then the address has a prominent position. The address is an ordering system that structures space (at the macro level of geography as well as at the micro level of the individual memory[36]), it specifies the target point for transmission operations, and if it is available in machine-readable form, it is executable, i. e. it

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[35] The various references to "automation" invoke a larger context: It would be necessary to show how the traffic of goods/logistics and sign traffic are actually connected, and at what points they follow a comparable development logic and – think of rationalization – comparable economic constraints. In my book 'Economics of discourse' I have given some thoughts on this (W., H.; Diskursökonomie. Frankfurt am Main: Suhrkamp 2004).

[36] Cf. my chapter 'What does a processor do?'

becomes part of an instruction that can be executed by automata.[37] In this respect, addresses are instances that mediate between the static of the space (and the memories) and the processual transfer procedures.

And even more: On the one hand, addresses have a special status; as metadata, they are glued to the message like the address label on an envelope. On the other hand, computers have the astonishing capability of treating addresses exactly like data: Addresses are not only transmitted and stored in parallel with data (the 'message'), they are also processed like the latter, i.e. constantly converted and translated.[38] Both, their positioning at the precarious interface between stasis and process (space and time) and their ambiguous status as data and metadata have hardly been considered so far.

I think that a new perspective does indeed emerge from what has been said. If the computer – as can be seen from the details of its construction – is not a stand-alone device, but a child of telegraphy; if it enters the nodes of the network and closes the gaps as well as the media breaks there, which until then required humans as 'translators'; if it creates a *continuous flow of data* together with telegraphy, then this could be the actual, qualitative leap. Flusser has tried to capture this leap with the concept of a 'telematic society.' Whether this has the character of a 'cerebral network' remains to be seen; rather, it seems as if machine readability and continuous flow of data place human users in a position similar to that of observers.

One thing is clear: *the computer makes certain mechanisms of communication visible for the first time*. This only becomes clear when we look at telegraphy. Like telegraphy itself, it can be seen as a machine that reenacts certain features of communicative practices by mimetically reproducing them and giving them a technical form. The fact that the computer reduces them – ambiguously – to the mechanical, and at the same time increases/multiplies and expands them, is what makes this mirror so difficult to comprehend.

[37] This connection between the command logic of programming languages and the automation of the address function would also merit further consideration.

[38] Ibid.

8 Processing

The third and neglected media function [1]

1. Introduction

Friedrich Kittler, the well-known exponent of German media theory, proposes three basic media functions, namely: *transmission, storage, and processing*.[2] Presumably, the first two will not be disputed; 'transmission' refers to communication and tele-communication, in other words, the media's ability to overcome spatial distances, while the second dimension, 'storage,' is synonymous with the overcoming of temporal boundaries, the forming of tradition, and the continuation of culture. Within media studies, the two concepts have been subject to extensive research.

Yet how about the third media function, *processing*? First of all, it is clear that there are a lot less critical inquiries, theories or ideas in this field. Equally clear is that Kittler's term derives from the realm of computers: computers not only transmit and store data, they also *process* them. But can we say, as Kittler does, that this term applies to *all* media?

Computers manipulate data and transform them. While we would expect a tape recorder to reproduce as accurately as possible what has been recorded, the reverse holds true for computers: We would be deeply disappointed if the output was precisely the same as the input. Accord-

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[1] Presentation at the Conference: Media Theory in North America and German-Speaking Europe, April 2010, University of British Columbia, Vancouver.
The text offers a preview of my book: Winkler, Hartmut: Prozessieren. Die dritte, vernachlässigte Medienfunktion. Paderborn: Fink 2015; the book is in German, it is available online:
http://homepages.uni-paderborn.de/winkler/Winkler--Prozessieren.pdf;
The main chapter of the book is included in the present volume (see chapter 4: Geometry of Time, pp. 35-48).

[2] "Among other things, this is concerned with media technologies, with transmission, storage, processing of information". (Kittler, Friedrich: Preface. In: Draculas Vermächtnis. Technische Schriften. Leipzig 1993, p. 8 (transl. H. W.)). A 1984 essay by Kittler is entitled: 'Literatur as Word Processing' (Kittler, Friedrich A.: Literatur und Literaturwissenschaft als Word Processing. In: Stötzel, Georg (ed.): Germanistik – Forschungsstand und Perspektiven. Vorträge des Deutschen Germanistentages 1984. Berlin/New York 1985, part 2, pp. 410-419. A 1989 collective volume is divided into the sections "Storage", "Transmission", and "Computing" (Kittler, Friedrich A.; Tholen, Georg Christoph (eds.): Arsenale der Seele. Literatur- und Medienanalyse seit 1870. Munich: Fink 1989). And finally: "First of all, there are transmission media such as mirrors [?], secondly, storage media such as films, and, thirdly, [...] machines that themselves manipulate words or numbers." (Kittler, Friedrich. Die Welt des Symbolischen – eine Welt der Maschine [1989]. In: id.: Draculas Vermächtnis, l.c., p.61 (transl. and add. H.W.)). What is striking is that language usage is not consistent; 'processing', 'computing', and 'manipulating' are used synonymously. At least one of the German media lexica provides an article on processing: Dotzler, Bernhard J.: Prozessieren. In: Roesler, Alexander; Stiegler, Bernd (eds.): Grundbegriffe der Medientheorie. Munich: Fink 2005, pp. 214-218.

ingly, *operations* take place inside the machine. We associate with computers the metaphors of activity, of *work*; and, as any Dell ad informs us, there is a 'processor' located at the heart of every computer.

Therefore, in the area of computer technology, Kittler's statement would not cause much controversy. What may provoke a scandal, however, is his claim that the triad of 'transmission, storage, and processing' should be extended to include *the media as a whole*. It seems doubtful whether this generalization is sensible and appropriate. Would we not, then, run the risk of limiting ourselves virtually automatically to a purely technicized view?

Nonetheless, this is precisely what makes this statement so interesting. Regarding various media, we need to ask what processing actually means. Are there theories capable of dealing with the question? I will argue that the third media dimension does indeed open up an unexpected, interesting new field. Herewith I'm providing a preview of the book I am currently working on, which has the topic of processing as its primary focus.

Moreover, I would like to offer an insight into a number of theoretical projects related to this approach and I will primarily discuss authors from the German-speaking realm of research.

Finally, let me make a last remark on the terminology I use: It seems typical of the field that relevant phenomena are dealt with using a wide range of different terminology. Consequently, we are forced to take a more general approach and to include theories that have concepts other than 'processing' as their key focal point.

2. Operations

The fact that we are now turning our attention to processing follows a general trend that has been observed in recent years, namely that German media theory has experienced a profound change; for a long time, the focus had been on reifications – texts/products, writing, discourse networks, technology or dispositives – this is now changing as the focus is shifting primarily to *practices*.

It was Sybille Krämer who trailblazed this trend by proposing a theory of 'operative writing'[3] that is based on the experience of computer programming languages and breaks new ground in describing writing as a self-acting device, as what is known as a 'techne' and a bundle of practices. A second important point concerns research on performativity, which, likewise conducted in Berlin and associated with the name of Krämer, draws upon Austin, Derrida and Butler to propose a more general media theory.[3] What performativity and processing have in common is

[3] Krämer, Sybille: Operative Schriften als Geistestechnik. Zur Vorgeschichte der Informatik. In: Schefe, Peter; Hastedt, Heiner; Dittrich, Yvonne (eds.): Informatik und Philosophie, Mannheim: BI-Wissenschaftsverlag 1993, pp. 69-84.
- id.: Kalküle als Repräsentationen. Zur Genese des operativen Symbolgebrauches in der Neuzeit. In: Rheinberger, Hans-Jörg; Hagner, Michael; Wahring-Schmidt, Bettina (ed.): Räume des Wissens: Repräsentation, Codierung, Spur, Berlin: Akademie Verlag 1997, pp. 112-122.
- id.; Bredekamp, Horst (ed.): Bild - Schrift - Zahl, Munich: Fink 2003.
- id.: Operationsraum Schrift. Ein Perspektivenwechsel im Schriftverständnis. In: Grube, Gernot; Kogge, Werner; id. (ed.): Schrift. Kulturtechnik zwischen Auge, Hand und Maschine, Munich: Fink 2005, pp. 13-32.
- id.: Zur Sichtbarkeit der Schrift oder: Die Visualisierung des Unsichtbaren in der operativen Schrift. Zehn Thesen. In: Strätling, Susanne; Witte, Georg (ed.): Die Sichtbarkeit der Schrift, Munich: Fink 2005, pp. 75-84.
- id.: OperationsSchrift. Ein Perspektivenwechsel im Schriftverständnis. In: Grube, Gernot; Kogge, Werner; id. (ed.): Kulturtechnik zwischen Auge, Hand und Maschine. Munich: Fink 2005, pp. 13-32.
- Fischer-Lichte, Erika; Kolesch, D. (eds.): Kulturen des Performativen. Paragrana, Internationale Zeitschrift für Historische Anthropologie, Vol. 7, issue 1, Berlin 1998.
- id.; Wulf, Cristoph (ed.): Theorien des Performativen. Paragrana, Internationale Zeitschrift für Historische Anthropologie, Vol. 10, issue 1, Berlin 2001.
- Krämer, Sybille (ed.): Performativität und Medialität, Munich: Fink 2004

that they both emphasize the aspect of change and of displacement.

A third context would be the concept of 'cultural techniques' that expands and dissolves the previously valid notion of technology by systematically including technical practices. Erhard Schüttpelz summarizes:

> "The German-language concept of cultural technique, a widely discussed concept in current German media theory, promises [...] to go back behind the reification of apparatuses and nouns in order to provide access to *verbs* and *operations* from which the corresponding nouns and artifacts were derived, such as writing, painting, computing, making music, and many more."[4]

The changeover harbors the risk of once again being one-sided, in the sense that the material nature of communication, the aspect of storage and the tangibility of objects fade into the background, which is why I proposed my own theory of how to bring both sides together.[5]

What becomes most obvious, however, is that the notion of 'processing' will need to be separated from media processes in general, for the simple reason that it is possible to regard as processes or procedures *anything* that concerns media. In the narrow sense of the term, processing would not only be a nominalized verb (this likewise applies to storage and transmission), but something that is *necessarily* process-related. Now, if processing is all about *change*, in other words, if it is entailed that input and output are actually different entities, then it goes way beyond turning nouns into verbs.

3. Production, Work

A possible first attempt of approaching this aspect of change would be by focusing on media in the context of production. There are many different ways of 'processing' involved in the manufacturing of media products, such as the active intervention in the material, the shaping and transformation of which culminates in the actual product. This product finally becomes the object of communication processes.

An alternative approach would be via the category of *work*, which the concept of the 'operative' evokes by its etymology. Surprisingly, the notion of work has been completely neglected in the debate outlined. Other than naming a widespread allergy to Marxist theory as a reason, this could be attributed to the fact that work requires a subject – and a human subject at that – which potentially may not apply to processing. That said, we routinely use anthropomorphizing metaphors each time we refer to a processor as 'working' at 3.2 GHz, or talk about 'tasks,' 'working memory' or 'workflow.'

This confronts us with a dilemma, namely if media processing requires a human subject per se or if this concept could likewise be attributed to an active technique. Equally, it would leave open the question of how the concept could be extended to include other media; for instance, could we regard a VCR or fax machine as actively working instances of processing?

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[4] Schüttpelz, Erhard: Die medienanthropologische Kehre der Kulturtechniken. In: Engell, Lorenz; Siegert, Bernhard; Vogl, Joseph (eds.): Kulturgeschichte als Mediengeschichte (oder vice versa?). Weimar: Universitätsverlag 2006, pp. 87-110, p. 87 (transl. and emphas. H.W.).

[5] W., H.: Discourses, Schemata, Technology, Monuments. Outline for a Theory of Cultural Continuity. In: Configurations, Vol. 10, no. 1, winter 2002, pp. 91-109; see chapter 2 in the present book.

4. Communication

What has been said above leads us to consider the issue in a wider context. It has become apparent that the operative side of the media – which includes processing – at first glance has nothing to do with the dimension of *communication*. Surprisingly so, given the fact that the majority of media definitions use concepts of 'communication' as their unquestioned premise. This is the point at which the three media functions crucially separate: While 'transmission' is almost synonymous with communication and 'storage' could likewise be regarded as 'communication along the time axis,' strangely, the approach does not fit the notion of processing. Whatever it may be, processing has *abandoned* communication; even manufacturing – working on a product – is quite a lonely process,[6] at least when compared to mass-media product proliferation.

The attempt to relate processing and communication to one another will lead us to Bühler.[7] As early as 1934 (which is 15 years before Shannon), he developed his famous 'Organon Model of Language', which at first sight resembles Shannon's sender/receiver model but differs in that it includes a third dimension relating to 'objects and states of affairs':

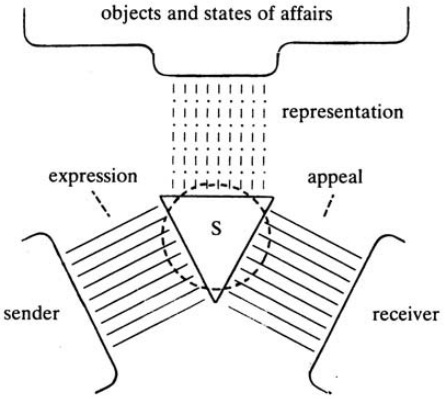

Fig. 1: Bühler, Organon Model[8]

In Bühler's approach, the sign takes center stage, which in media studies equals the message, or media product. Employing different line patterns, Bühler emphasizes the axis of communication (depicted as the horizontal line in the diagram) that connects the sender and the receiver:

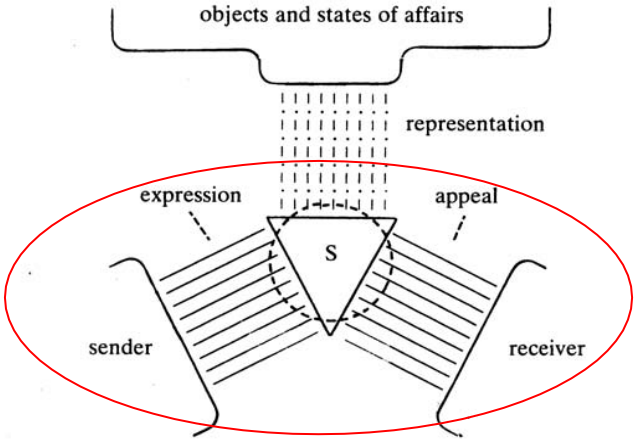

Fig. 2: Axis of communication

[6] ...lonely, unless we are dealing with collective products, such as movie…

[7] Bühler, Karl: Theory of Language [1934]. Amsterdam 1990, p. 35; despite its year of publication, Bühler's book is not concerned with the philology in Nazi Germany; he had been teaching in Vienna since 1922 before he was arrested by the Nazis in 1938 and was able to emigrate to the United States via London in 1940.

[8] Ibid., p. 28.

The notion of ‘processing’ would induce a change in emphasis, however: Now the vertical axis – leading from the sender to the objects / states of affairs – becomes important:

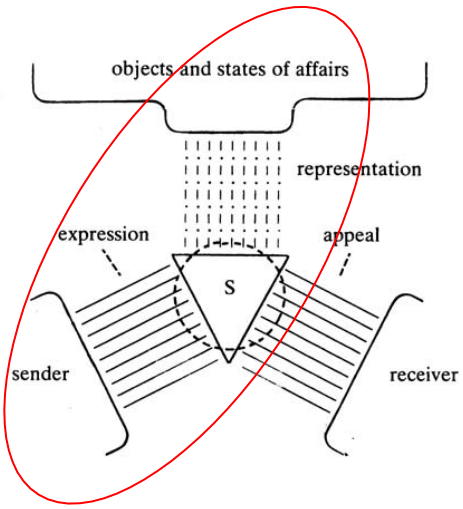

Fig. 3: Processing axis [9]

Here, communication and receiver are pushed aside to the edge of the diagram. Tentatively, the model could be modified as follows:

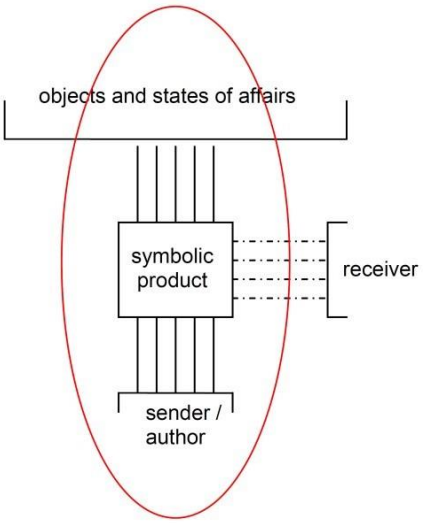

Fig. 4: Bühler, modified

At least on this level of ‘processing’, it is not the sender and receiver interacting but the sender as producer interacts with the product. And possibly, via the product, she communicates with the ‘objects and states of affairs’ the product refers to.

5. The Medium as *Opposite*

This change in perspective also changes the role of the media. No longer the channel of communication, they themselves occupy the position of the communicator. Whether you are writing a text, designing a layout or editing a movie, it means that you are processing your product and intervening with this product in a formative way. Physically you are facing media technology; alongside with the bundle of rules and codes, the laws of the system of signs, in which the product is articulated.

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[9] Dotzler points out that processing can also occur on the receiver’s side: “Communicative acts, of any kind, not only have [...] a channel – a medium – as a precondition, but on both the sender’s and receiver’s side they also rely on operations that produce and process information.” (Dotzler, Processing, l.c., p. 215).

In German research, this new positioning has been propagated first and foremost by Reinhard Keil.[10] That Keil is a computer scientist is no accident: The field of computer science locates itself within the engineering sciences and, as is well known, engineers tend to concern themselves with objects rather than communication processes. We all spend a large part of our lives in front of a computer screen. Which is yet another reason why it is plausible that we communicate with technology.

However, Keil's argument goes far beyond this; basing his approach on Gibson[11] and Gregory[12] he demonstrates that the process of cognition necessarily depends on a material opposite. Only the material opposite will enable an 'experience of differentiation,' and along with it surprise and the awareness of what is new. Potential opposites are, for one, 'nature,' such as in scientific experiments; or, and this is the second option, products that man has created himself, whether in the form of symbolic products or as three-dimensional technology, which in itself provides a material opposite for experiments.

Such a concept relates cognition to action, in other words, to the act of consciously engaging with objects; and it polemically distances itself from the concept of 'pure' thought and the traditional dualism between body and mind.[13]

6. Ordering, Organizing, Logistical Media

Engineers plan and organize, managers manage, while the far larger fleet of white-collar workers sorts, organizes and pushes signs back and forth in a wide variety of media. If all this can be subsumed under the heading of *processing*, we see a range of media functions emerge that is almost impossible to grasp under the primacy of communication: First and foremost, media are machines that enable us to generate and to test certain orders, in other words, machines that project orders onto our world.

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[10] Keil, Reinhard: Von der Zeichentransformation zur Wissensarbeit. Digitale Medien eröffnen neue Potenziale für die Wissensarbeit. In: Forschungsforum Paderborn, 4, 2001, pp. 12-17.
- id.: Medienqualitäten beim eLearning: Vom Transport zur Transformation von Wissen. Bibliothek Forschung und Praxis 31 (1), 2007, pp. 41-50.
- id.: Das Differenztheater. Koaktive Wissensarbeit als Selbstorganisation. In: Bublitz, Hannelore et.al. (eds.): Automatismen. Munich: Fink 2010, pp. 205-230.

[11] Gibson, James J.: The Ecological Approach to Visual Perception [1979]. Hillsdale, NJ: Erlbaum 1986, p. 258ff.

[12] Gregory, Richard L.: Eye and Brain. The psychology of seeing [1966]. Oxford: Oxford Univ. Press 1995.

[13] This thought may equally refer to Arnold Gehlen, who in 1957 depicted acts of gaining knowledge in the form of a 'circle of actions': "[T]he circle of action is quite easy to show [...]: If you are trying a key in a lock, a sequence of factual changes occurs at the level of key and lock, such as, for example, if the lock is jammed and you need to keep trying a little longer. On the factual level, we have a series of successes and failures that you are able to see and hear and feel, in other words, they *provide feedback* to you and can be perceived; and on the basis of this perception you will change your actions accordingly, in other words, you may move the key in the lock in a different way until, finally, you will experience success on the factual level – the lock opens. This is a circular process, i.e., a process that can be imagined a single circular process that necessarily runs via mental intermediate elements, perceptions, and intermediate motor elements, a person's own movements, and progresses in the factual level before it returns. [...] Splitting this process further into its physical and mental components would not add anything; quite the opposite, it would only hamper the description, in the same way that each conscious reflection upon this difference while the action (i.e., fiddling with the key) takes place would only be counterproductive. *The action itself, as I would suggest, is a complex circular movement that is controlled by facts of the external world.*" (Gehlen, Arnold: Zur Geschichte der Anthropologie [1957]. In: id.: Anthropologische Forschung. Zur Selbstbegegnung und Selbstentdeckung des Menschen. Reinbek: Rowohlt 1961, p. 18 (transl. and 2nd emphas. H.W.). The above model is reminiscent of an 'error-controlled servo-mechanism' or 'closed loop regulator' (Ashby), while the influence of cybernetics is evidenced in the fact that Gehlen makes reference to 'feedback.'

Krämer demonstrated this for techniques of written computation: Only the written form enables us to break down the process of computing into single steps, which are then handled successively. It is for the simple reason that intermediate results are recorded that individual steps become comprehensible and are hence saved.[14] Once again the opposite is a medium; paper in this case. A dialog ensues between the person doing the computing and the paper, during the process of which order gradually takes shape.

John Peters made the suggestion to study the media's *logistic* function and with calendar, clock, and tower named rather unusual examples of media.[15] Drawing upon Innis, he relates the logistic function to the control of space and time; my suggestion would be to broaden the concept and to include the term 'logistic' as referring to media's general function to organize the world, and to process orders in the realm of symbolic trial action. We may assume with certainty that, prior to writing and computing, language had the same role and ordering function.

7. Exploration of the World, Media of Perception, Experience, Cognition

There are further options in what I have said so far. Quite unexpectedly, it now becomes possible to re-conceptualize those 'media of perception' that had previously been condemned to a rather odd marginal existence in the world of media. If a German introduction to the media places "media of observation (and, more general, perception)" – such as, for example, telescope, microscope, and X-ray machine – ahead of four types of media, and hence before "storage/processing," "transmission", and "communication,"[16] their status remains somewhat unclear. Characterizing media of perception as "expanding and enhancing human sense organs",[17] or, in the words of McLuhan, viewing them as prostheses, does not seem very helpful to me. However, it cannot be disputed that telescope and microscope do, in fact, have a media side to them,[18] and Benjamin, for example, had likewise emphasized the function of heightening and training perceptive skills also in the fields of photography and film.[19]

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[14] Krämer, Sybille: Operative Schriften als Geistestechnik. Zur Vorgeschichte der Informatik. In: Schefe, Peter (ed.): Informatik und Philosophie. Mannheim 1993, pp. 69-83.

[15] Peters, John Durham: Calendar, Clock, Tower.
http://web.mit.edu/comm-forum/legacy/mit6/papers/peters.pdf, last accessed on: Sept. 11, 2024, p. 16 ff.

[16] Hickethier, Knut: Einführung in die Medienwissenschaft. Stuttgart: Metzler 2003, p. 21 (transl. H. W.).
An idea on the media of perception is also proposed by Gibson: "[telescope, microscope:] The discovery of these instruments in the seventeenth century enabled men to know much more about very large bodies and very small bodies than they had before. But this knowledge was almost like seeing. The mountains of the moon and the motions of a living cell could be observed with adjustments of the instrument not unlike those of the head and eyes. The guarantees of reality were similar. You did not have to take another person's word for what he had seen." (Gibson, The Ecological Approach to Visual Perception, l.c., p. 279 (emph. & add.: H.W.)).
The notion itself, as Campe points out, is of course much older: "In the accompanying letters on Aesthetica [1750], [Baumgarten] likewise recommended the study of the instruments employed by natural scientists in their experiments. Telescope and microscope, hygrometer and barometer and their use in experiments were as closely entwined with the nursery of aestheticism as the poetology." (Campe, Rüdiger: Technik im Geist. Kommentar zu Geoffrey Winthrop-Young. In: Zeitschrift für Kulturwissenschaften, no. 2, Dec. 2008, pp. 133-138, 135 (transl. H. W.).

[17] Ibd. (transl. H. W.).

[18] See e.g.: Vogl, Joseph: Medien-Werden: Galileis Fernrohr. In: Archiv für Mediengeschichte, no. 1, 2001, pp. 115-123.

[19] Benjamin, Walter: The work of art in the age of mechanical reproduction [1936]. In: id.: Illuminations. London: Fontana Press 1992, pp. 211-244.

Measuring devices, such as thermometers, would need to be discussed in the same register as they are anchored both in nature and in the realm of signs.

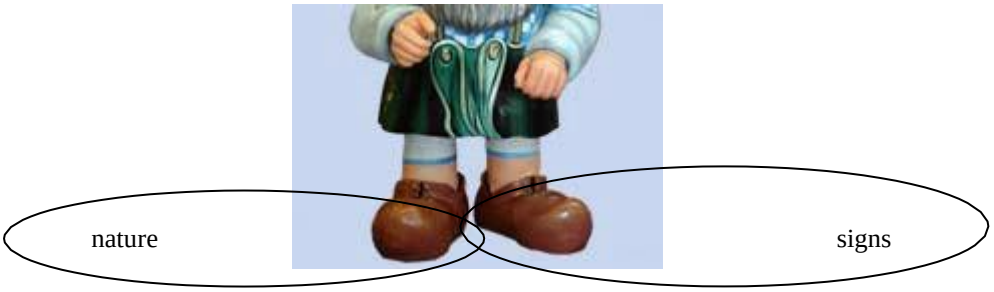

Fig. 5: Measured data

Once technically programmed, they convert natural phenomena into data. In Bühler's diagram, I would locate media of perception on the vertical axis described above. More generally, this is about the power of the media *to explore the world*.

For a long time, the question as regards reference, the media's relation to the world, was simply *out of fashion*, not to say, taboo. The fact that German media theory is now increasingly concerning itself with the theory and history of science, and issues in the theory of cognition – always related to the media – are playing an increasingly important role, is a clear indication that things have changed.

8. Transforming, Translating

Let us return again to the narrower field of 'processing.' Texts focusing on the media's *transforming* power as their central issue provide yet another approach that will further illuminate the question at hand.

Fig. 6: Transformers

Quoted below once again is a passage from the above-cited introduction:

> "The transformation of signs. [...] In media communication, signs can [...] go through multiple media transformation processes as regards their bearers and symbolic character. [...] Movies are usually projected onto a screen so as to make their signs visible. [...] If a movie is shown on television, its analog image is translated into an electronic image, i.e., it is scanned by cathode rays and converted into electrical impulses, which in turn are modulated onto frequencies and sent, received and retransformed into an electronic image on the screen. [...] For this reason, the transition from

the digital storage of image and sound is merely a transformation."[20]

The above examples illustrate that media in general act as 'translators.' They construct *process chains* during which signs are repeatedly transformed as they pass through various stations, both at the technical level and the precarious interface where media intersect with their users; both within single media and in the space between media, i.e., during media transfer. Each of these translation steps can be understood as particular procedures of media 'processing.'[21]

On a more general level, Michel Serres, who has based an extended media theory on the notion of 'translation,' deserves a mention,[22] as does, in Germany, Robben in his attempt to conceive computers as a paradigmatic 'medium of translation.'[23]

9. Transcribing

The theory of 'transcriptivity' developed in Cologne by Jäger/Jarke closely touches upon translation and transformation.[24] However, their approach is not concerned with technical process chains, but once again with media production, in other words, the activity of authors. According to Jäger/Jarke, authors do not write but *rewrite*. This claim is particularly evident with regard to academic writing: Scholars access an archive in order to read, select and re-organize material until, finally, from a wealth of old texts an individual new text emerges, including the aspects that are actually new. Once completed, the text is once again stored in the archive where it awaits its reactivation in the next cycle.

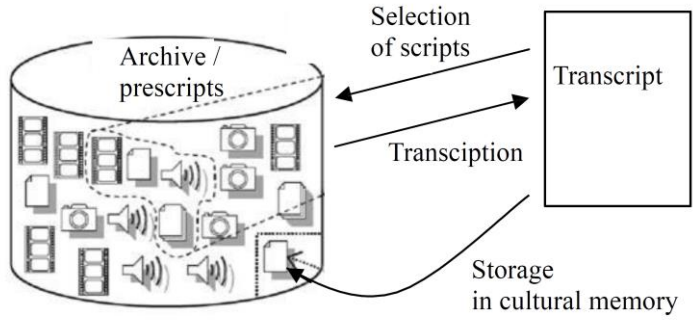

Fig. 7: Jäger/Jarke:
Authorship as transcription [25]

The theory of 'transcriptivity' attempts to illuminate the reciprocity between active production

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[20] Hickethier, Einführung in die Medienwissenschaft, op. cit (FN 16), p. 77f.

[21] Within the so-called Apparatus Theories, the argument has systemic significance; according to Baudry, the complexity of technical translation in the medium of film defies any claim to realism. He outlines the individual steps by way of illustration: [Réel - objectif (lumière)] → [scénario, découpage] → [Pellicule/camera (enregistrement sonore)] → [montage] → [projecteur (lumière)] → [écran, projection, réflexion] → [spectateur]. (Baudry, Jean-Louis: effets idéologiques produits par l'appareil des base. In: Cinéthique, no. 7/8, 1970, pp. 1-8, 2). The English version contains the argument but not the illustration (id.: Ideological Effects of the Basic Cinematographic Apparatus. In: Film Quarterly, no. 27, winter 1974/75, pp. 39-47).

[22] Serres, Michel: Hermès III. La traduction. Paris: Minuit 1974.

[23] Robben, Bernard: Der Computer als Medium. Eine transdisziplinäre Theorie. Bielefeld: Transkript 2006, pp. 11f.

[24] Jäger, Ludwig; Jarke, Matthias; Klamma, Ralf; Spaniol, Marc: Transkriptivität. Operative Medientheorien als Grundlage von Informationssystemen für die Kulturwissenschaften. In: Informatik Spektrum 31, 1(2008), pp. 21-29.

[25] Ibid., p.23 (transl.: H. W., fig. slightly modified).

and archive. If indeed writing can be considered as rewriting – transcribing, precisely – it follows that media production is part of a *discourse*; by no means is it 'lonely' in the above sense, but always dependent on the conditions in which it finds itself, and is moreover the foundation for all that is to follow.

This is a very powerful model that, in my opinion, can be equally applied to acquire an understanding of the notion of 'processing'. Initially, in that media production is radically *processualized*; not merely because each activity resembles a process and is therefore time-dependent, but first and foremost at a macro level that incorporates a single production into the discourse as a larger temporal structure.

9. Addressing, Forwarding

Transcription theory demonstrates that processing remains systematically connected to the other two media functions. Transcription itself – an active interference – is processing; however, the interaction ensuing between author and archive can only be perceived as *transmission*, while the archive in turn represents the *aspect of storage.*

Pursuing this path further, it becomes clear that, conversely, transmission procedures likewise require multifarious kinds of 'processing' to take place at the nodes of the network; consider, for example, the distribution of letters at a central post office, a switchboard or an Internet hub: Every single delivery implies certain acts to take place, such as decision-making, addressing, reordering – in short, 'logistics' in the more direct sense of the word.

Fig.8: Switchboard[26]

Fig. 9: Internet hub
in Frankfurt, Germany[27]

[26] Image: http://www.jackson.army.mil/Museum/History/pix/image305.jpg, last accessed on February 25, 2010.

[27] In 2008, the web exchange point DE-CIX situated in Frankfurt/Main was upgraded to a capacity of 1.4 terrabits per second (Chip online, April 9, 2008). As regards traffic, it currently places second in the world (status: March 2010).

Intuitively, we would subsume these processes under the heading of 'processing', except for one crucial difference: Above, we defined processing as *interfering modification*; however, by no means can this definition be extended to hold for acts of delivery, which – ideally – do not interfere with the internal structure of what is delivered.[28] Only individual, self-contained texts whose integrity is to be ensured by the very process of delivery can actually be transmitted/delivered and stored. Likewise, the switching and forwarding processes at an exchange point keep the forwarded products intact. Must we hence assume that there are, in fact, two different, clearly distinct kinds of 'processing'?

Provided that nodes in the communication network are switchboards and switching is a particular type of media processing, we are faced with the task of bringing together the logic of switching, delivering, and processing.

10. Address space

Let me say that, to date, I have not come upon a satisfactory solution. What has become clear by this point is that the two concepts – namely, processing as interfering modification and processing as switching/forwarding – each relate to a different *space*: Processing in the sense of interfering modification remains within the creative space of an individual text, hence the interference manipulates the internal structure of its elements. On the other hand, processing in the sense of switching/forwarding relies on the constitutive text and thus relates to a far larger space that is geography.

I propose that, despite all their differences, it is nonetheless possible to describe both spaces by using a common framework of concepts. The key concept here would be that of *address*:[29] If I am editing a movie (i.e., modifying it by interference), it is up to me to decide on the point in the movie, the physical *location*, to which a particular sequence is to be moved. If I am forwarding/processing a letter, the address is a far-away, geographical place. If I am saving a file, I am interested in the location in which it is precisely and physically stored.

What is spectacular about it is that each case actually involves *address spaces*. Admittedly, geography may compare to a memory chip's architecture as macro compares to micro; however, even our everyday experience of working with computers clearly points to the fact that the difference between the two spaces is diminishing, for example, in that a local search on your own private PC increasingly resembles a global search done on the Internet.

Obviously, this suggestion has a limited scope. What has been illustrated above only applies if processing (as a first provisional attempt) is reduced to purely syntactic operations; semantic operations or processes in the minds of those involved could hardly be perceived as the pushing back and forth of texts, textual passages, or individual signs.

However, this is not my concern. Because what seems to be emerging here could still be something very general: the possibility to relate processing, transmission and storage to the common frame of a general *logistic system*. Provided that processing in the sense of manipulating interference is essentially *reordering*, and 'switching' actually takes place at the nodes of the net (a precondition on transmitting content or forwarding it to storage locations), it follows that media are 'logistic' in an unexpectedly extended sense. When John Peters presented this concept to me for the first time, I argued that 'logistics' is tied to an instrumental perspective. But in the meantime, I admit, I have changed my mind.

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[28] This was shown most of all by Siegert in his analysis of the history of the postal system (Siegert, Bernhard: Relays: Literature as an Epoch of the Postal System [1993]. Stanford, Cal.: Stanford University Press 1999).

[29] Some research has been done in German media theory on the subject of address (see e.g.: Andriopoulos, Stefan; Schabacher, Gabriele; Schumacher, Eckard (eds.): Die Adresse des Mediums. Cologne: DuMont 2001).

9 Cultural Techniques for Reducing Complexity

Intro:

Nearly all social and cultural theories agree that modernity is characterized by an ever-increasing differentiation of social functions and an increase in social complexity. And here is a core of the concept of modernity as well as modernization; complexity appears on the one hand as an achievement of modernity, on the other hand as a cause for many problems that are also characteristic of the present state of affairs. And all appearances speak for this interpretation. No society of the past appears to be as complex, as interdependent, as globally interconnected as that of the present; no technology as presuppositional, no division of labor as deeply graded, no system as functionally differentiated into so many systems.

And on the problem side, no historical society appears comparably opaque. Lack of transparency and the fact that controlling interventions often fail is the second, the black side of social differentiation and complexity. That is why neoliberalism relies on the self-regulation of the market, a paradigm that always presupposes the diagnosis of excessive complexity and opacity of the socio-economic process, and scorns the alternative of a planned economy, which believes that the economy can be subjected to central control. And sociological theories agree with this; Luhmann, in particular, has repeatedly emphasized the connection between social differentiation and complexity. His key words are contingency and contingency management:

> "The form of differentiation of modern society, the differentiation of functional systems, and the hypertrophy of organizations compels the renunciation of central regulation; and this precisely because this system [...] can treat all structures as changeable, all determinations as contingent. The renunciation of central control, of central contingency management, of centrally guaranteed future security is unavoidable in this social order […]."[2]

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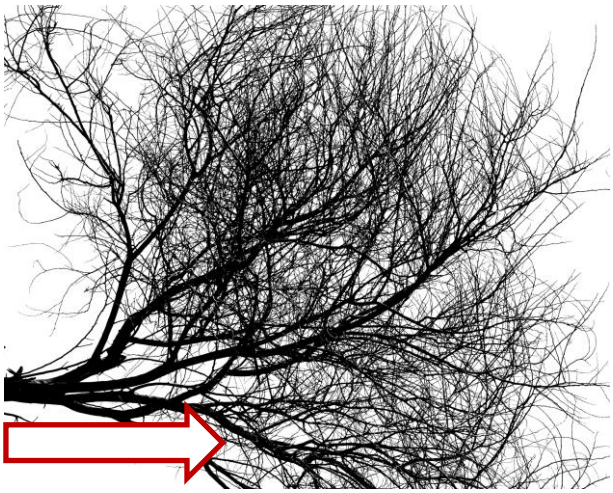
[1] The text is based on a lecture I gave in 2013 at the graduate school 'Automatisms' of the University of Paderborn. 'Cultural Techniques for Reducing Complexity' was the topic of the second grant phase of the project (www.uni-paderborn.de/en/research-training-group-automatisms).
Web publication in German 2013/2022: Winkler, Hartmut: Kulturtechniken zur Reduzierung von Komplexität: https://homepages.uni-paderborn.de/winkler/Winkler--Kulturtechniken-zur-Reduzierung-von-Komplexitaet--2022.pdf; The text has been revised for the translation.

[2] Luhmann, Niklas: Politische Steuerungsfähigkeit eines Gemeinwesens [1993]. In: Id.: Schriften zur Organisation, Bd. 4. Wiesbaden: Springer 2020, pp. 323-336, here: p. 332 (transl. H. W.).

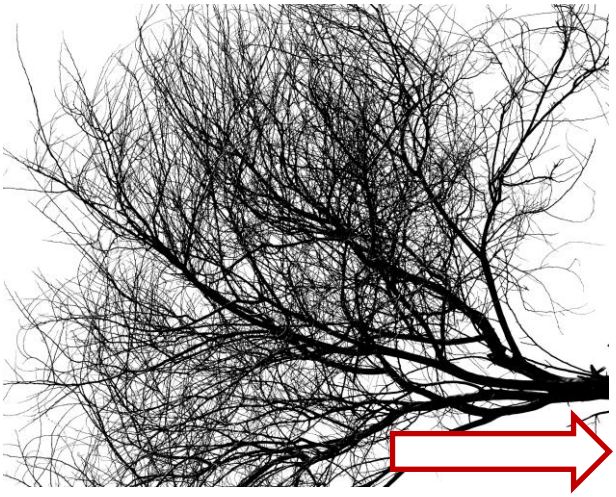
Foucault has discussed – critically-skeptically – mechanisms of 'governmentality;' and this concept also assumes that overview and central control are without chance; and again precisely because complexity can neither be rolled back nor controlled by traditional means.

Despite all this evidence, I would like to contradict the sketched picture. And there are two things that make doubts possible here: First, very many historical social formations have perceived their respective present as particularly opaque and confusing; there are corresponding reports both from antiquity, which appears to us today as the epitome of a 'classically' ordered society, and from the early modern period, where religious conflicts in particular were perceived as an overflow of diversity, an apocalyptic-existential experience of division, as the potential dissolution of the world into chaos.

The second doubt would be a systematic one. It is not at all conceivable that complexity simply increases in a linear and unlimited way.



My thesis is therefore that societies have always developed cultural techniques[3] that limit complexity, make it manageable or intercept it. Differentiation processes are counterbalanced by mechanisms of de-differentiation.



[3] The term 'cultural techniques' was coined by the German media theorist Sybille Krämer in the 1990s. The concept has three goals: (1.) It tries to free the concept of technology from the unfortunate limitation to hardware and insists on including technical *practices*; (2.) it wants to show that every culture is bound to certain techniques, and every cultural practice is a technical one; and (3.) it focuses especially on medial and symbolic operations. (See f. e. Monoskop: Cultural Techniques (https://monoskop.org/Cultural_techniques); Krämer, Sybille, Bredekamp, Horst: Culture, Technology, Cultural Techniques – Moving Beyond Text. In: Theory, Culture & Society, 30(6), 2013, pp. 20–29).

In the following, I will present some of these mechanisms. And I will provide – roughly gridded and unverified – a sketch, a list of examples rather than a theoretical contribution.

To use examples from different historical epochs brings with it the risk of trying to fit historically heterogeneous things into a pre-selected theoretical molding. I accept this risk; I believe that the procedure is possible precisely because it is no more than a sketch, and a structural similarity only on an extremely abstract level. I want to show that in all historical epochs there has been a systematic entanglement of increase/growth of complexity and its reduction; and that one must basically assume a conflict between differentiation and de-differentiation, increase and arrest of complexity.

The thesis itself is relatively low-risk; and yet it seems to me useful to unfold it in different directions to show that the reduction of complexity in the space of culture is firmly established and – to take it further – simply indispensable.

My second goal is to reevaluate de-differentiation. De-differentiation – unlike differentiation – has a miserable image. A low level of differentiation stands for ‘simple,’ for ‘not appropriate to the matter,’ for under-complex; whoever advocates differentiation is always already right; the increase of complexity appears as natural, its reduction as an intervention that has to be justified.

I will first present some ‘traditional’ cultural techniques for the reduction of complexity and then describe the crisis they are facing with the shift to modernity; and finally, some of those cultural techniques with which modernity itself reduces or copes with complexity. By then, at the latest, we will be talking about historically specific things.

And I will strictly limit myself to the perspective of my subject, media studies, and from there take a look at the environment in which the media operate. The aim is to clarify what contribution the media, as a very special form of cultural technology, make to reducing complexity.

I. Traditional Cultural Techniques to Reduce Complexity

1. Boundaries

Niklas Luhmann, as already said, has dealt with social complexity in a special way.[4] Boldly and also relatively roughly, he distinguished between three major historical formations of society: From originally ‘segmentary’ societies, i. e. local, village communities, the ‘stratified’ societies of the early advanced civilizations have developed, in order to finally pass over into the ‘functionally differentiated’ societies of modernity. The first term already conspicuously names a cultural technique of reducing complexity: the technique of demarcation.

Segmentary societies are segmentary insofar as they bind themselves to a territory and to borders. Historically, this solution is particularly well established and successful; and it continues to have an effect today, as the single-family home, the gated communities, and the resurgence of nationalisms show. This solution is successful because the demarcation of borders allows a sharp line to be drawn between inside and outside, to devote all care to

[4] Cf.: Luhmann, Niklas: Social Systems [1984]. Stanford: UP 1995, pp. 12-58.

the inside and to largely ignore what is behind the border. In this respect, the border represents a communication breakdown; it reduces complexity because it physically excludes it.

But is it really a matter of de-differentiation? Viewed as a whole, certainly not; rather, what emerges is a buzzing diversity of local conditions, of locally particular forms of rule, economies, cultures, languages, and dialects.

And yet, the segmented society performs a de-differentiation, namely inwardly. Complexity is limited by what is called the formation of a horizon; controllable spaces and a specificity of the local emerge, which as a specific context, as the familiar, as a niche and bundle of circumstances is not interchangeable. Segmentation, then, is a social strategy for managing complexity.

At the same time, the demarcation of boundaries comes at a high price; the sharp inside-outside demarcation implies that the people behind the border are ‘strangers.’

And at the borders, this also applies to the family home, there is potentially war. The second price is that peace and consensus are not automatically established on the inside either; rather, on the inside, segmentation means repression, i. e. more or less violent unification, ranging from complete social control in the village to paranoid nationalism and ‘ethnic cleansing.’

My sketch, of course, is too rough in every respect: Thus, even in segmented societies there is communication across borders, there is long-distance trade, travelers and nomads, as well as supra-regional commonalities and alliances; there are natural processes of differentiation ‘across’ the territorial divisions, and unintentional increase of complexity; and there are secessions of all kinds. The assertion that differentiation and de-differentiation contradict each other must therefore be complemented by a second one, that even in cases of dominant segmentary structuring there are different layers, which by no means all follow a logic of segmentation.

2. Hierarchies

Second, Luhmann mentions the stratified societies, which emerge in the city-states of antiquity; and what begins in the segmentary societies increases here. Hierarchy, top-down rule, and the formation of a state apparatus, which are typical of stratified societies, can also be understood as cultural techniques for reducing complexity, insofar as they cast the inward repression that was just mentioned into a fixed form. In this way, larger geographical territories become controllable; and the demarcation of borders jumps from regional units to the scale of the state; now the other states are the 'enemy' (and inwardly the slaves); and the society changes its inner structure: An increased differentiation and division of labor and thus economic and technological 'progress' become possible.

3. Religious and Metaphysical Systems, Order, and 'Meaning'

The stratified societies of antiquity were priestly dominions, and segmentary as well as stratified societies are determined by the fact that secular power ties itself to religious power. This means that metaphysical systems take on a crucial role in social integration.

Religion/metaphysics are also cultural techniques for reducing complexity, and, although there is a myriad of historical differences, probably the most universal and powerful known to history. Religion and metaphysics are totalitarian by their very nature: They claim to answer not some, but potentially all questions that confront human beings. In this way, they establish a closed structure of meaning that provides a unique orientation.

In monotheistic systems, this structure of meaning also conspicuously takes the form of a hierarchy. Whatever categories humans develop, they achieve security only by referring ultimately to the last instance, the Creator God, who is beginning and end. In religiously centered societies this structure of meaning is existential, insofar as it encompasses the entire physical and psychic, earthly as well as meta-physical existence; with the dawn of modernity, it is virtually reduced to the symbolic, it is limited to the provision of order, orientation, and meaning. Metaphysical systems reduce complexity because they center the world and, for all their complexity/intricacies, are clearer, more lucid, and more concise than the questions they answer.

4. Ritual and Repetition

Within traditional societies, ritual and repetition play a prominent role; they are the primary means of stabilizing social processes over longer periods of time. And ritual and repetition are also cultural techniques for reducing complexity because they force practices into a particular trajectory – into a circular movement. In ritual and repetition, practices reliably return to a certain point again and again. And in this way, what would otherwise be threateningly open-ended becomes predictable.

5. Tradition

The fifth system of complexity reduction I want to address is tradition. It dominates the segmentary and the stratified societies parallel to religion/metaphysics, and it is closely intertwined

with them. Tradition provides the stocks of experience and knowledge by which almost all social spheres, everyday life, crafts and technology, economy, morality, and law... reproduce and stabilize themselves.

The appeal to tradition is a means of power and often in alliance with it, thus it also has a repressive side. This becomes clear when the ancient Egyptian priestly caste, in the concept of 'maat,' conflated tradition and custom, rule and hierarchy, morality, virtue, and unshakable order.

At the same time, however, the formation of tradition is not repressive per se. From a present day's perspective, rather, it must be understood as an early form of 'modern' solutions to the problem of complexity because tradition-building functions bottom up, at least on one of its sides; as a blind result of distributed practices, which, because they are distributed and because they are practical, can never be completely controlled and steered.

6. Selection, Decision

Taking back one more step, another mechanism to reduce complexity is decision-making. Decisions, as Luhmann again showed in one of his early essays, have their point in the fact that they – always and automatically – eliminate alternatives.[5] Decisions are also a means of contingency control. From a bundle of options, a single one is chosen; from the buzzing multiplicity of the possible, only one actually becomes real. And if the decision is irreversible, one can thus actually leave the complexity of alternatives behind.

Accordingly, nowadays the manager is celebrated as the decision maker. Doubt – 'To be or not to be' – is left to the stage hero in tights, the male role is defined by decisiveness and action, by overcoming hesitation.

This solution is also entangled with repression because it is dependent on structures that define and secure the position of the decision-makers like an exoskeleton and make decisions actually enforceable. And worse: There is always doubt that the decision could have turned out differently. If freedom of the will is part of the definition, and certainly also the basis for the pleasure of 'free' decision-making, the accusation of arbitrariness immediately lurks like an abyss. If the decision has to justify itself and to show its reasons, it is no longer 'free.' And even monarchs have probably only been able to enjoy monarchy in 'Absolutism,'[6] just as today the 'Autonomists' [in Germany the term for the Antifa] enjoy the illusion of autonomy.

7. Practice

Decisions are decisions when they become practical. And here it is Horkheimer/Adorno who draw attention to the implications, among other things, again for a reduction of complexity.[7] Where thinking opens up new spaces, reveals possibilities, and increases complexity – at least virtually – that which becomes practical, and that means actual, has radically reduced the space of the possible; backwards, insofar as – as described – the alternatives are eradicated; and forwards, because practice creates facts and thus – at least to some extent – also determines the future.

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[5] Luhmann, Niklas: Interaktion, Organisation, Gesellschaft. Anwendungen der Systemtheorie [1975]. ln: Id.: Soziologische Aufklärung 2. Opladen: Westdeutscher Verlag 1991.

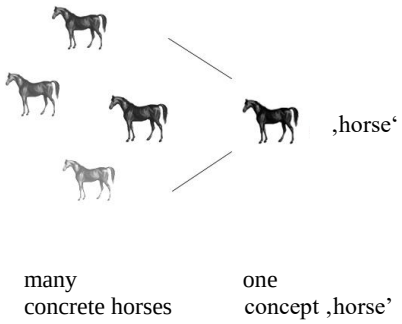
[6] 'Absolutism' detaches the ruler (whether ideally or actually) from all interdependencies.

[7] Horkheimer, Max; Adorno, Theodor W.: Dialectic of Enlightenment. Philosophical Fragments [1947]. Stanford: UP 2002.

8. Language

Another, and also very powerful, cultural technique for reducing complexity falls even more clearly into the realm of culture and cultural studies, and there into the field of media; for the most far-reaching and effective reduction of complexity is probably achieved by language.

Language analyzes and organizes the world by turning its buzzing multiplicity into terms. Central to language is the mechanism of subsumption: A single term subsumes many individual things, regardless of all the differences that make these individual things individual. The term horse, for example, takes no account of the fact that there are large and small horses, white, brown, and black ones, riding horses, draught animals, and racehorses; and if language can also distinguish and analyze this, then only with the help of newly subsuming terms.



The terms of language are necessarily abstract; and language is a cultural technique of abstraction. Language reduces complexity by suggesting which differences (which complexity) one can neglect in order to accentuate certain other differences. In this way, a structure of precast distinctions emerges, a picture of the world so compact and manageable that it fits into the small heads of individual humans.

II. Crisis and Transition to Modernity

With the dawn of modernity, Luhmann leaves no doubt about this, almost all of the solutions mentioned become obsolete; or at least they lose their significance and power. First and foremost, this applies to the ordering system of border demarcation.

Geographical borders are increasingly perforated by growing traffic and trade. A network of mutual interrelations emerges, which reaches global scale with colonialism and world trade; the horizon as a protective space loses its significance.

The religious and metaphysical systems of order (3.) are pushed back in the Enlightenment; and likewise (5.) the orientation towards tradition, insofar as the Enlightenment explicitly turns against tradition, history, and custom, and accepts, at least programmatically, only reason as a measure. And if religion and metaphysics provide and guarantee meaning, in modernity the category ‘meaning’ comes into crisis, too.

Where one nevertheless resorts to tradition – in the quotation architecture of the 19th century, or currently in the re-erection of long-gone historical buildings – artificial paradises are created that bear the stigma of their artificiality.

Hierarchies (2.) – as a system of order – prove to be rather more stable. It is true that since the death of God the position at the top of the pyramid is vacant, so that the earthly hierarchies lose their central reference point; but neither the military, nor the state, nor the economy of the modern age can do without hierarchies, command, and obedience. Even in the university hierarchies there are superiors and authority to issue directives, and what was removed to some extent in '68 is currently being restored.

The cultural technique of 'decision' (6.) runs into extreme problems. On the one hand, decision-making is 'modern' in a specific way, and a motor of differentiation: After all, the Enlightenment had encouraged doubt, the 'no' and the 'but.' And 'no' and 'but' bring into the world those alternatives that are characteristic of modernity; at the same time, however, with every 'no' or 'but' a new branching occurs, and consequently a thicket of ever-branching, dissipative structures. To the extent that modernity provides a myriad of new options for action and thought, and the realm of the possible expands quantitatively, every decision must now appear to be arbitrary to an increased degree. The keyword is again contingency. Every decision that is made in this space of possibilities is quite obviously contingent; and that means that it carries with it the fact that it could have turned out completely differently under slightly changed circumstances, values, or presuppositions. And at the same time, the Enlightenment with its systems of meaning – this is reflected by de Sade, and Nietzsche in his Genealogy of Morals – has also undermined many codes of value formation...

The result is that decisions seem to be increasingly violent, especially when the decisions have material consequences. The bland district administrator who says 'yes' to the siting of a nuclear power plant rests in peace twenty years later. But if the following generations finally decide otherwise, they will have to bear the consequences for tens of thousands of years.

As I said at the beginning, my sketch is rough and crude. Basically, however, I am only summarizing once again in a coarse way what is common knowledge anyway – a set of commonplaces in theories of modernity and present-day culture. And the core should nevertheless have become clear, namely that modernity has a specific complexity problem. That is the only thing I am concerned with. To the extent that complexity increases quite naturally and the traditional cultural techniques fail to arrest it at the same time, a structural problem arises. Or rather, a structural problem would (and would have to) arise, if there were no specific 'modern' cultural techniques for the reduction of complexity. These I want to describe – just as drastically abbreviated – in the following third section of my text.

III. Specific Modern Techniques of Complexity Reduction

1. Division of Labor, Functional Differentiation

The most obvious cultural technique that modernity relies on to get a grip on its complexity is, if we ask Marx, the division of labor, or, asking Luhmann, functional differentiation.

Similar to what has been described for the segmentary society, division of labor and functional differentiation produce both: a drastic reduction of complexity inwardly and new complexity on the level of the whole. They reduce the burden on the individual, who carries out his work in his facet of division of labor or functional differentiation. Division of labor reduces complexity because it allows one to ignore everything that lies outside one's own area, or to trust that those who work there know their trade and are also doing their best.

The price is the "blinkered specialist" against whom, for example, McLuhan – a generalist in media studies – polemicizes,[8] a variant of limited horizons. At the same time, as said, the division of labor produces complexity; and of course, it also falls back on the individual: Namely, when the objects do not submit to the differentiation and unexpected consequential problems arise, or when the mutual interrelation forces an excessive number of communications.

2. Institutions, Rules, Procedures

Closely intertwined with social differentiation is the emergence of *institutions*. Institutions reduce complexity by appropriating certain functions of society – courts the administration of justice, broadcasters 'mass communication,' and super-markets certain sectors of commerce. They take these functions out of society, so to speak, bundle them and codify them; with the consequence that the other sectors of society can – at least in principle – let go of these functions.

And something similar applies more generally wherever rules and procedures emerge. Similar to what was described above for the ritual, rules and procedures force practices into a cyclical movement; they transfer into repetition what would otherwise be incalculable variance and complexity.

3. Technology

The third mechanism I want to mention is technology. Technology simplifies drastically, although common sense would contradict this and classify technology itself as 'complicated.' Paul Valéry could still marvel that "water, gas, and electricity are brought into our houses from far off to satisfy our needs in response to a minimal effort",[9] the flick of a light switch replaces what was once, from finding the pine tap to lighting it, to tending and maintaining the fire, a complex sequence of actions. This sequence has now been reduced to a single act through technology.

Actor-network theory has spoken here of 'punctualization' and of 'blackboxing.'[10] Complexity is virtually encapsulated and thus managed. It makes sense, however, to distinguish between two roles; if there is simplification, it is only for the user, so technology itself frees up this role and separates it from that of the technician, who handles the complexity that the user blends out. Technology always has two doors: a front entrance for the audience, and a backstage entrance reserved for the specialists.

Wherever a solution succeeds in being cast in hardware, it gains all the persuasive power of the factual, which eliminates its alternatives, similar to what has been described above for practices (7.). The solution itself becomes solid and fixes whole sequences of actions; thus technology is – paradoxically – a cultural technique primarily in relation to practices; and the fact that this solution is effective produces the avalanche of technology that characterizes Western modernity.

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[8] McLuhan, Marshall: Understanding Media: The Extensions of Man [1964]. MIT Press 2001, pp. 7ff.

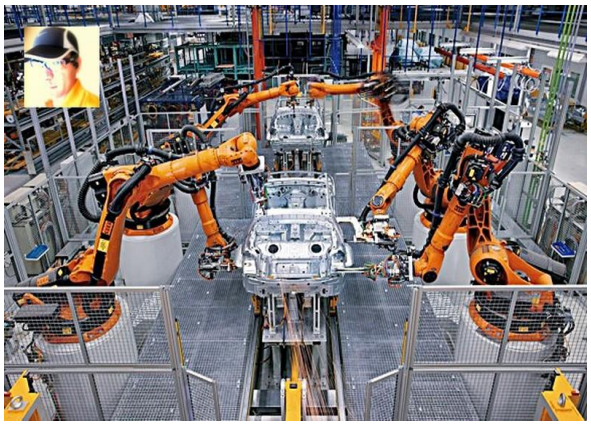
[9] Cit. by: Benjamin, Walter: The Work of Art in the Age of Mechanical Reproduction [1936]. In.: Id.: Illuminations. NY: Schocken 1969, pp. 217-251, here: p. 219.

[10] ‚Punctualization' cf.: Law, John: Notes on the Theory of the Actor-Network: Ordering, Strategy and Heterogenity. In: Systemic Practice and Action Research, vol. 5, 1992, pp. 379-393. 'Blackboxing' cf.: Latour, Bruno: Die Hoffnung der Pandora. Untersuchungen zur Wirklichkeit der Wissenschaft [1999]. Frankfurt am Main: Suhrkamp 2002, p. 373.

4. Rationalization, Economy

The fourth mechanism is economy. Economy – complex as it is – favors the simple over the complex. We call a solution economic if it saves effort; and at this very general level, economy is a kind of automatism: The economic will always prevail over the less economic; just as it is hard to get water up a mountain, but easy to get it down.

The term for the simplifying side of economy is, interestingly enough, ‘rationalization’; a self-given honorary title that endows the simply commercial with a reference to ratio, concealing the fact that it is a ratio strictly limited to rationality of purpose.



And the core of the capitalist economy, the commodity form, is also an extremely effective cultural technique for reducing complexity. Wherever it is possible to reduce the whirlingly complex social relations to the formula ‘goods for money,’ that which was previously their volume implodes. The old man telling about his grandson at the supermarket checkout did not understand this clearly enough; economic transactions are wordless-scarce in a unique way.

That reduction is not equally unproblematic in all cases becomes clear in the border areas of the world of commodities: for example, in the case of human trafficking, which we regard as generally condemnable, in the case of bribery, prostitution, or drugs; and the question of whether third-party funding from industry is really compatible with the universities’ commitment to truth seems equally worthy of discussion. The universal medium of exchange, money, is therefore by no means simply universal. The fact that it appears to be universal and the extent of its power, however, show how effective this means of organization is and how captivatingly simple the form of simplification it offers. Money reduces complexity by bringing the qualitatively most different things into a common scheme.

5. Standardization

Institutions, rules/procedures, technology, and economy have in common that they cause standardization. This is particularly evident where standards and norms are explicitly formulated; whether top-down, as in the case of the National Institute of Standards and Technology (NIST),[11] or bottom-up, in that certain solutions become accepted as standards.

Standardization reduces complexity by drastically diminishing the number of variants in circulation. And at the same time, it is the necessities of traffic and exchange themselves – think of the interchangeable parts of serial production – that force standardization.[12]

6. Aesthetic Reduction

A special case, because it is of little importance for the overall functioning of society, but nevertheless interesting as a special case, is the reduction of complexity on the terrain of the aesthetic. If modern art is characterized by 'abstraction,' then this abstraction begins with a drastic reduction, in Constructivism, for example, to primary colors and to simple geometric shapes; in Malevich's case to the famous black square.

And it is precisely the reduction, the power to get rid of everything superfluous and to distill a kind of essence from the multiplicity of visual appearances, that is perceived here as 'modern.' The same applies to the specifically 'modern' architecture, which virtually exhibits the function of each technical component, makes us feel the statically acting forces, and reduces the supporting structure to the technically possible minimum – down to the 'skeleton.'

The fact that artistic modernism at the same time branches out into a multiplicity of extremely individualized, unique, incommensurable 'positions' and causes anew an explosion of complexity is also in this case the other side.

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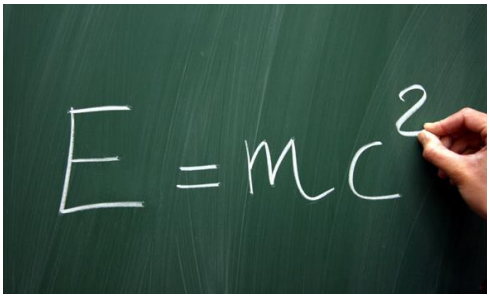
[11] Cf.: https://www.nist.gov/.

[12] Cf.: Winkler, H.: Diskursökonomie. Frankfurt am Main: Suhrkamp, p. 188.

7. Abstraction in the Natural Sciences

The keyword of abstraction can be found – of course – in other fields as well. And perhaps most prominently and most effectively in the natural sciences, which, along with economy and technology, are probably the most reliable pillar of Western-dominated modernity.



Science aims to capture the processes of nature in laws. And this means in essence reduction again, because where the processes of nature are themselves overwhelming and exuberantly complex, the laws, once formulated, are uniquely compact. What $E=mc^2$ actually means, I (socialized in the humanities) have never fully understood; the mere fact that the formula relates space and time, which Kant still considered irreducible 'categories,' exerts a unique fascination.

That the laws of nature are nevertheless not simply 'construction,' i. e. man-made or a glass bead game[13], becomes clear when natural science hands over its laws to the technicians for practical utilization. Then nature is forced to verify what has been achieved; verified, however, again in a reduced sense; as in the case of economy, brought down to an instrumental rationality.

8. Formal Languages

If language was mentioned above, and if it fell under the 'traditional' cultural techniques that reduce complexity, then formal languages are certainly to be mentioned among the specifically 'modern' ones. Formal languages (mathematics, computer languages, algorithms/software, etc.) achieve a reduction of complexity which is even more effective and radical than that of 'natural' languages.

Formal languages arise at the intersection of the system of numbers (the quantification), secondly, mathematics, which provides the rules of transformation (the algorithms) and determines which operations are permissible and which are not, and thirdly, formal logic, which is a deduction of certain aspects of the natural language.

Formal language systems have unique properties: They are – quite unlike natural languages – free of contradictions, and this freedom from contradictions can be checked and ensured by formal means; they can be mechanized, i. e. handed over to machines, and they combine representation and operationality, insofar as world aspects can be represented in models, and programs formulated in formal language can be practically executed.

How powerful formal languages are is proven by the fact that billions of computers are working worldwide. Deeply interwoven into our everyday life, they perform their reduction of complexity by matching the most diverse practices and making them compatible with the pre-programmed formal models; in doing so, both sides mutually optimize each other: The scarce and sparse models are tested to what extent their simplifications – although scarce and sparse – are *valid*; the practices, vice versa, are increasingly adapted to the models.

[13] Note on translation: a German idiom based on Hermann Hesse's eponymous novel that denotes a theoretical-abstract intellectual game devoid of practical utility.

IV. Conclusions

My thesis was that processes of social differentiation have a necessary complement in cultural techniques that specifically reduce complexity. That this is the case has certainly become clear.

And closely related to this, that it is extremely heterogeneous cultural techniques that fulfill this function. If my reconstruction is rude and grossly summary, it is primarily on this point, in passing through social practices that have little more in common than this very function of reducing complexity, and which even the broad concept of 'cultural techniques' has difficulty encompassing. And then it has become clear that while complexity may arise by itself, it apparently takes *work* to get it back under control.[14]

This leads to another point: If I pleaded at the beginning to evaluate processes of de-differentiation less pejoratively, this happens almost automatically as soon as one takes a look at the cultural techniques in question. With the insight that processes of de-differentiation are ubiquitous and, moreover, functionally necessary, de-differentiation transforms into a descriptive category.

And perhaps – one could argue – there is even a need for *more* de-differentiation than the current culture provides. Is there possibly a crisis after all? Too much complexity? I will leave it at that. I announced to deliver something that has the form of a sketch, and a sketch is – of course – also a cultural technique to reduce complexity.

[14] One is almost tempted to think of the laws of thermodynamics: Complexity (disorder) increases naturally, reduction of complexity (order) requires the supply of energy...

10 How to Do Things With Words, Signs, Machines – on Performativity [1]

1. Intro

In the following, I will attempt to test the concept of 'performativity,' as developed in linguistics using language as a model, for its applicability in media studies. And my example is the computer. The thesis is that performativity offers a framework for understanding certain of its media properties, and possibly also the technical-apparative side of media in general, whose inherent logic and interaction with human practices continue to be one of the decisive puzzles for media theory.

And, to say this straight away, I will propose a critical reading of the performative. The first section will deal with a conceptual clarification; and here first of all with the aspect of *action* that theories of performativity link with the sphere of the symbolic. From this, I will derive a definition of the symbolic that is in clear tension with the concept of action. In a third step, I will pursue certain implications that some current readings of the performative may have. And finally, I will return to the actual topic, media technology and computers in particular.

Originally, my text was to be called 'Performativity and Performance,' which, in the computer context, is a joke that emphasizes the fact that computers – and sports cars, for that matter – reduce performance to speed. This may be an indication that time plays a role; after all, performativity is about action, and thus about the question of whether action, like time, is irreversible or, with some luck and the means of the symbolic, perhaps reversible after all, and what – possibly – our media-implemented desires are in this field.

2. Acting and Speaking

I would like to start with a distinction that underlies all talk of 'performativity,' but which is nevertheless rarely explicated, a distinction that is certainly crude and perhaps all too crude, but which will nevertheless quickly lead us into far less crude, not to say tricky, questions. Any talk of performativity, I maintain, implies and assumes a two-world theory. On the one hand, a world of saying, of words, of the symbolic, and on the other, a world of doing, which is obviously

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[1] Printed in German: Winkler, Hartmut: How to do Things with Words, Sings, Machines. Performativität, Medien, Praxen, Computer. In: Krämer, Sybille (ed.): Performativität und Medialität. München: Fink 2004, pp. 97-111; reprinted in my book: Diskursökonomie [Economy of Discourse]. Versuch über die innere Ökonomie der Medien. Frankfurt a. M.: Suhrkamp 2004, chapter 12, pp. 215-230; the book is available online: https://homepages.uni-paderborn.de/winkler/Winkler--Diskursökonomie.pdf.
First draft translation.

quite different. Austin's title 'How to do things with words' would not be a provocation if the two spheres did not normally fall far apart.

This is clear in the traditional understanding of language. It had wisely limited itself to the sphere of words and initially only considered the world beyond language as the target of referential or indicating gestures; it had focused on assertive utterances, i.e. statements whose action character was very much in the background and described linguistic practice as an 'application of language in situations of utterance.'

Austin, of course, had criticized this. From the perspective of my two-world interpretation, his project appears as a bridge that moderates the abyss between saying and doing. Using the example first of the 'explicit performative,' and then by demonstrating that every utterance has a performative dimension, Austin had shown that saying is fundamentally an action, or more precisely, that words extend into the sphere of action. Words have consequences not only in the case of marriage formulas; and because this is so, Austin proposed to ask: 'How to do things with words.'[2]

What is striking here is that the formulation leaves the polarity itself largely intact. Only those who at least implicitly assume that there is a sphere beyond language in which actions are unquestionable and actions in the true sense, a sphere in which the question 'How to do things' would be self-explanatory, can state that words have an action dimension. So let us ask with and against Austin: 'How to do things.'

And the first obvious place to start is sociology, which traditionally deals with collective practices and the actions of individuals and society and has probably made the most elaborate proposals on the concept of action.

3. The Concept of Action in Sociology

First of all, however, our expectations are disappointed: Esser, for example, who has written a well-known German introduction to sociology,[3] opens his argument with the concept of action:

> "Sociology (as this very ambiguously used word will be understood here) should mean: a science that seeks to comprehend social action in an interpretative way and thereby explain its course and effects causally."[4]

Just two sets later, however, the situation is far less clear:

> "Action is to be understood as human behavior [...] if and insofar as the actor or actors associate a subjective meaning with it."[5]

In both cases, Esser adopts Max Weber's formulations. The difference lies in the relation between action and 'meaning:' if in the first quotation meaning is exclusively on the side of interpretative sociology, in the second it is on the side of action; now only that which the actors themselves associate with a subjective meaning is to be regarded as action. One could say that meaning, starting from the need for interpretation, has moved over to the side of action.

In the context pursued here, this is important for methodological reasons. At least from a traditional perspective, the category of 'meaning' is closely linked to language. While my starting point was the attempt to polarize saying and doing as sharply as possible, the saying now seems

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[2] Austin, John L.: How to Do Things with Words. London: Oxford UP 1962.

[3] Esser, Hartmut: Soziologie. Allgemeine Grundlagen [1993]. Frankfurt a. M.: Campus 1996.

[4] Ibid., p. 3 (transl. H. W.).

[5] Ibid. (transl. H. W.).

to undermine the doing in a peculiar way. And this problem can be found in a number of sociological approaches: in the emphasis on instrumental and subjectively goal-oriented action,[6] in Parsons' realization that action always takes place within systems of orientation,[7] in Luhmann's recourse to communication and 'meaning,'[8] or in the tendency to always design the concept of action with regard to its ethical dimension.[9]

All these concepts of action appear to be dominated by criteria that one would intuitively have attributed to the sphere of the symbolic, and thus to the area that I wanted to contrast with action. Must we therefore conclude that there is no difference between acting and saying – even beyond the theses of speech act theory?

I would like to suggest staying on the terrain of the social sciences, but now going back to theories that predate the 'linguistic turn' in time and perspective. If we – guided by Gephart[10] – go back to Friedrich Gottl, a national economist at the turn of the 20th century, for example, a very different concept of action emerges. From the concept of the 'action sciences,' whose object is the study of human actions, Gottl arrives at the conviction that action is the basis at least of economics;[11] thus a concept of action is exposed that also includes non-intentional actions, models the action of others as resistance,[12] and emphasizes the opacity of action, i.e. the fact that action is by no means dependent on meaning, understanding, reflection, symbolization, and symbolizability. Gephart can also demonstrate the direct effects of this concept of action in Weber, for example when Weber writes:

> "[T]he action of men is not interpretable in […] purely rational terms, […] not only irrational 'prejudices,' errors in thinking and factual errors but also 'temperament,' 'moods' and 'affects' disturb his freedom – in brief, […] his action too – to very different degrees – partakes of the empirical 'meaninglessness' of 'natural change.'"[13]

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[6] For example, Gephart refers to Dilthey: "The psycho-physical unity [of man] ... receives, mediated by the nervous system, constant influences from the general course of nature and it constantly acts back on it. But it is in its nature that the effects that emanate from it occur primarily as an action that is guided by purposes." (Gephart, Werner: Handeln und Kultur. Vielfalt und Einheit der Kulturwissenschaften im Werk Max Webers. Frankfurt a. M.: Suhrkamp 1998, p. 75 (transl. and add. H. W.). And the concept of instrumental action is harshly criticized by Horkheimer, Adorno and Habermas, for example.

[7] Reconstructed e.g. in: Wenzel, Harald: Die Ordnung des Handelns. Talcott Parsons' Theorie des allgemeinen Handlungssystems. Frankfurt a. M.: Suhrkamp1990, pp. 17ff.

[8] Luhmann, Niklas: Soziale Systeme [1984]. Frankfurt a. M.: Suhrkamp 1993, pp. 64ff., 92ff. 191ff.

[9] "Action, every activity of the human being in which his organism is involved and for which he feels responsible (in contrast to reflex movements). [...]. Action theory, a new phil. theory of action, a new phil. discipline that is mainly practiced in Anglo-Saxon countries. Sub-discipline of ethics, or more generally: scientific theory of all action sciences." (Schischkoff, Georgi (ed.): Philosophisches Wörterbuch. Stuttgart: Kröner 1982, p 256f. (transl. H. W.)).

[10] Gephart, Handeln und Kultur, op. cit (FN 6), pp. 43ff.

[11] Ibid., p. 51.

[12] Ibid., p. 52.

[13] Weber, Max: Critical Studies in the Logic of the Cultural Sciences. In: Id.: The Methodology of the Social Sciences. Glencoe (Ill.): The Free Press 1949, pp. 113-158, here: p. 125. Esser makes a similar point: "[...] One should add that these unplanned social effects also occur without the actors' knowledge of them. [...] The discovery that a large number of social phenomena and institutions – such as money, the law, cities and communities, the division of labor and the state – emerged unplanned and in small steps from the very short-sighted actions of individuals in an evolutionary way and precisely because it was not planned as an end result by anyone, it shows its miraculous functionality, is one of the most far-reaching findings – by no means of sociology alone [...]. Unplanned consequences do not always have to be pleasant [...]." (Esser, Soziologie, op. cit. (FN 3), p. 25 (transl. H. W.)).

This definition certainly has the advantage of being closer to the concept of action in everyday language: After all, it encompasses purposeful and rational action as well as actions based on misunderstandings, mistakes and, for example, accidents; right up to the incomprehensibility of major crimes, which entire generations try to work through and to resemanticize, but the simple factuality of which makes possible criteria of meaning virtually roll off. The interim result would be that action – at least according to one side of the concept – is therefore not bound to meaning, and only under this condition can we speak of a polarity between action and saying, 'how to do things' and 'how to do things with words,' at all.

The fact that both spheres intermingle at the same time, as speech act theory and recent sociology expose, is once again explicitly conceded; likewise, that criteria such as consciousness and meaning have also been harshly criticized in the field of language; in order to make the argument pursued here stronger, however, a further step in the direction taken is necessary.

4. Definition of the Symbolic

Let us supplement what has been said from another angle. The contrast outlined above emerges even more sharply than in the field of sociology as soon as we attempt a definition of language itself, and in essence: a definition of the symbolic. Some of the approaches that have become prominent in this field gain their clarity precisely in the contrast that is at issue here, namely by contrasting the sphere of the symbolic with a sphere of actual actions.

I would like to at least briefly outline four of these approaches. First of all, various authors emphasize the fact that the symbolic, if it is to function as symbolic at all, is dependent on a relatively strict demarcation from the actual, a demarcation that protects it from simply being flooded by the actual. One example is the stage ramp, which uses the means of architecture to separate the symbolic space of the stage from the actual events in the auditorium; a second example is the decoupling of the human voice from practical purposes, the basis for sounds within language to become signifiers.[14]

Huizinga and, similarly, Benviste have attempted to define the space of the symbolic through play.[15] Games define delimited internal spaces that enable action that is purposefully decoupled from actual consequences; play and the symbolic thus confront the 'seriousness' of the actual existence; the separation of both spaces is a prerequisite for enabling and exploring additional degrees of freedom in the space of play.

Again and again, and also in Luhmann's work, the symbolic is determined by its reversibility.[16] In contrast to the actual murder, the murder on stage is reversible; this makes possible the *trial-*

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[14] See, for example, the reconstruction of the emergence of language in Leroi-Gourhan (L.-G., Id.: Gesture and Speech [1964]. Cambridge (Mass.): MIT 1993). Or: "For this purpose, a special class of objects emerged, which Krzysztof Pomian calls semiophores, i.e. objects that were created to manifest something other than themselves, which have a primary or exclusive symbolic value in contrast to their utilitarian value. Together with sacred places and ritual practices, they create reference points to link those present in the present with the spheres of the dead and the invisible." (Grassmuck, Volker: Das lebende Museum im Netz. In: Schade, Siegrid; Tholen, Georg Christoph (eds.): Konfigurationen zwischen Kunst und Medien. München: Fink, pp. 231-251, here: p. 134 (transl. H. W.)).

[15] Huizinga, Johan: Homo Ludens. A Study of the Play-Element in Culture [1938]. Boston: Beacon Press 1964; A concise summary of the positions can be found in: Neitzel, Britta: Gespielte Geschichten. Struktur- und prozessanalytische Untersuchungen der Narrativität von Videospielen [2000]. https://scholar.archive.org, pp. 43-58). Cited there: Beneviste, Emile: Le jeu comme structure. In: Deucalion 2, Paris 1947, pp. 159-167. Krämer develops the same idea with reference to Bateson: "Where there is play, we act symbolically" (Krämer, Sybille: Die Eigensinnigkeit von Medien. www.inf.fu-berlin.de/-ossnkopp/eignsinn.html. n.d.).

[16] Luhmann, Niklas: Temporalstrukturen des Handlungssystems. In: Id.: Soziologische Aufklärung III, Opladen: Westdeutscher Verlag 1993, pp. 126-150.

action which, in direct polarity to the actual action, is probably the most important definition of the symbolic.

And finally, the symbolic has a privileged relation to the sphere of possibility, which surrounds the zone of the factual with an ocean of fractally staggered alternatives.[17] Derrida's insistence that language has its core not in the descriptive and indicative, but in the subjunctive and metaphor, which Searle still wanted to relegate to the periphery as 'inauthentic speech,' points in a similar direction.

All of these definitions have something in common, and of course they are chosen to distance the symbolic and the factual as far as possible. While the factual has its focus in the sphere of necessity, the confrontation with nature and the struggle for existence, the symbolic does not appear to be completely exempt from these constraints, but still decoupled from them in a purposeful way. And accordingly, two types of action can be clearly contrasted: those irreversible ones with which we irreversibly change the world through intervention, and those reversible or at least less irreversible ones that we address as symbolic. And especially with regard to the ecological problem, it would be desirable for many possible things to remain in the sphere of symbolic trial-action instead of becoming actual. But what does the assertion of performativity mean against this background?

5. Gradating Performativity

I think that the above forces us to first distinguish between different gradations of performativity. Measured against the world-changing power of actual actions, symbolic actions are fundamentally 'weakly performative.' Yes, even more: If the renunciation of practical consequences is a determination of the symbolic, this means a renunciation of performativity. If an utterance is 'performative' to the extent that it simultaneously carries out the "linguistically described action in the extra-linguistic reality,"[18] then it competes with a broad field of other actions that do not even take the detour via language; and the real act of killing far surpasses any verbal-performative marriage formula in its irreversibility.

I am expressly not saying that it is irrelevant to concern oneself with performativity; however, I do believe that such considerations must be placed within the larger framework of a cultural theory that, in addition to the space of the symbolic, also concedes a space of the non-symbolic (or a space that is not self-evident, not primarily or initially symbolic). And 'actions' belong to this space, at least as far as the side exposed here is concerned.

6. Current positions

My objection within the current debate on performativity is that it avoids the question thus posed. As interested as the authors involved take up the term itself, they conspicuously level out the difference that separates the system of saying from that of doing. Moreover, the concept of performativity seems to offer the opportunity to view the scenery solely from the perspective of symbolic events.

This is clear in Butler, who associates far-reaching political hopes with the theory of perform-

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[17] Köhler proposes Plessner as a witness, whose 'eccentric positioning of the human being' places the category of possibility at the center (Köhler, Sebastian: Potentiale neuer Medien für gesellschaftliche Kommunikation. Zwei philosophische Perspektiven von John Dewey und Helmuth Plessner. In: Hebecker, Eicke et. al. (eds.): Neue Medienumwelten. Zwischen Regulierungsprozessen und alltäglicher Aneignung. Frankfurt/N.Y.: Campus, pp. 62-74.

[18] Duden: Das Fremdwörterbuch, Mannheim: Dudenverlag 1974, p. 547 (transl. H. W.).

ativity;[19] she combines Austin with Foucault and above all takes up the Foucauldian idea that discourses have a productive effect, i.e. that discourses *produce* reality; an idea that does indeed touch on the model of performativity. If what we find as reality must be addressed as a result of discourses, this means that reality is dependent on discourses, and more precisely: on the cycles in which its structure is reproduced. Politically, this opens up the possibility of intervening in these cycles of discourse; even a slight deviation from the dictates of repetition, an intervention, for example through divergent sexual or symbolic practices, must inevitably result in a changed reality.

In a completely different and yet perhaps structurally similar way, Krämer, for example, has proposed to make performativity fruitful for the theory of computers.[20] One of the stimuli for thought here is the specific property of computers, controlled by a program and a set of data, to independently produce unpredictable and possibly astonishing new results as output; this forces a change in the concept of performance, which, in contrast to the linguistic tradition of Chomsky, for example,

> "performance no longer understands as the – distorted and inadequate – realization of a proven competence, but as a productive force that not only follows structures, but produces them itself."[21]

The second pillar is an equally changed concept of writing; writing is no longer defined as written language, but rather, by including algorithms and computing operations, for example, as an independent cultural technique, a media technology that continues to evolve as writing, opens up new spaces and develops a performative power.[22]

As convincing, indeed compelling, as the argument is in view of a reality that is actually changing in an obvious way as a result of computers, and as plausible as the project of bringing theoretical concepts up to the present is – a possible objection would come from a completely different side. It seems striking to me that in both cases an originally critical argument threatens to turn into an affirmative one. On a first level, the current debate certainly recognizes the blindness of practices. It turns this against the apparent lucidity and self-certainty with which language and the symbolic were previously associated, and points out that even linguistic events, insofar as they are actions, cannot be understood as a sphere of 'pure reflection.' It thus belongs to the far more extensive discourse of a very radical critique of language that has, developed in the wake of post-structuralist approaches, critically deconstructed the concept of the sign and changed our conception of language in the long term.

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[19] Butler, Judith: Gender Trouble. NY/London: Routlege 1990, pp. 128ff; Id.: Excitable Speech. A Politics of the Performative, New York: Routledge 1997.

[20] Krämer, Sybille: Sprache – Stimme – Schrift. Sieben Thesen über Pertormativität als Medialität. In: Fischer-Lichte, E.; Kolesch, D. (eds.), Kulturen des Performativen, Sonderband Paragrana, Internationale Zeitschrift für Historische Anthropologie, vol. 7, No. 1, Berlin 1998, pp. 33-57.
- Id.; Stahlhut, Marco: Das 'Performative' als Thema der Sprach- und Kulturphilosophie. In: Fischer-Lichte, Erika; Wulf, Christoph (eds.): Theorien des Performativen, Paragrana, Internationale Zeitschrift für Historische Anthropologie, vol. 10, No. 1, Berlin 2001, pp. 35-64.
- Id.: Sprachphilosophische Grundlagen des Begriffs 'Performanz'. Performativität als Medialität. Unpublished manuscript 1998.
- Id.: John L. Austin. Performative und konstatierende Äußerungen: Warum lässt Austin diese Unterscheidung zusammenbrechen? In: Id.: Sprache, Sprechakt, Kommunikation. Sprachtheoretische Positionen des 20. Jahrhunderts, Frankfurt a. M.: Suhrkamp 2001, pp. 135-150.
- Id., Die Eigensinnigkeit von Medien, op. cit (FN 15).

[21] Krämer, Sprache – Stimme – Schrift, op. cit. (FN 20), p. 2 (transl. H. W.).

[22] Id.: Sprache und Schrift. In: Zeitschrift für Sprachwissenschaft, No. 15.1, 1996, pp. 92-112.
- Id., Sprache – Stimme – Schrift, op. cit. (FN 20).

At the exact same time, however, and this is the other side, the argument threatens to become affirmative, and I think against the intention of those involved in the debate. Affirmative towards practice – not a specific practice, but practice in general – which now becomes the criterion and yardstick for linguistic events. After all, shouldn't practice, especially when it is largely blind, be subjected to a similarly profound critique?

Practice, wordless action, seems to me to determine the social process far more easily, far more effectively, and more saturated with power than those acts that are limited to being speech acts. In a sovereign bypassing of the symbolic, arguments are made here in concrete, steel, glass and biotechnology; and facts are created that we at best rework in the medium of the symbolic. My argument is that the concept of 'performativity,' precisely because it takes a critical approach to language, must protect itself against falling into an alliance with an uncritical concept of practice.

7. Technology as a Performative Arrangement

The theories of performativity, however, also seem to me to offer options for another, more critical reading. Austin's theorem, one could say, has become practical in a peculiar way. Firstly, in the development of media itself, and then, as I will show in my final argument, specifically in the case of the computer.

In one of the aforementioned essays, Krämer made it clear that the question of performativity also opens up a new perspective on the technical side of the media.[23] Austin's question 'How to do things with words' focuses on words, a symbolic system that was already no longer at the center of media development in his time; if media are fundamentally dual beings, with their signifier side on the one hand part of the actual world, but on the other hand carriers of what I have called the symbolic above, then the tension between these two determinations has clearly intensified in the course of historical development. To the extent that technology is also pushing forward in the sphere of the symbolic, evident in equipment-dependent photography and telegraphy, and further via film and TV to the computer, which is defined by increasingly advanced hardware, the signifier side is gradually gaining in importance. As technical implementations, the media are conspicuously involved in technical practices; and thus, in that which is factual, which the symbolic should confront.

And the question of performativity also appears changed in the perspective of this consideration: For performativity must also inevitably increase with the mechanization of the media, but not, as in the case of the marriage formula, because the message becomes reality, but because the technical-media arrangement itself is established, which only subsequently and independently of its content gives the message a greater effect and an increasingly compelling character. Performativity, this would be my first suggestion for a definition, passes from the content to the technology. The signs have become practical in a very genuine way by increasingly following the line of mastering nature.[24]

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[23] Krämer, Die Eigensinnigkeit von Medien, op. cit. (FN 15).

[24] Krämer herself argues along similar lines: "The imprinting power of a medium – that is the assumption – unfolds in the dimension of a meaningfulness beyond conventional semantics. And it is the medial materiality that provides the basis for this surplus of meaning, for this added value of significance that is not intended by the users of the signs and is not subject to their control." (Ibid. (transl. H. W.)).

8. Computers

In the case of the computer, the problem becomes even clearer. The computer, one could say, is the performative medium par excellence. First of all, it is obvious that computers not only store and transmit data, but also transform it under the control of algorithms. At the heart of the computer is a processor; the calculations themselves are time-bound and have a procedural character; and since the calculation process is automatic, the result is unpredictable and open, at least in principle. All of this seems like an illustration of the question of performativity: As if media practice itself has abandoned the model of static(?) representation and has moved on to a dynamic practice of signs, and theory is only following in its wake.[25]

I have certain doubts about this interpretation, but I would first like to develop the argument itself further. Computers, secondly, have the peculiarity that they are bound to formal languages. Already in Leibniz, formalization is closely linked to the idea of an ideal language. A language whose internal coherence is guaranteed by a strict set of rules, which can avoid the abysses and ambiguities of semantics and transform them into testable relations.

This is relevant to the question of performativity for a particular reason; those who emphasize the action aspect of symbolic operations are forced to construct the symbolic as an act, i.e. from the standpoint of topicality.[26] In the case of natural languages, this would be opposed by the concept of code: The code always refers back to the past to which it owes its form, and to the imprinting power that it imposes on current symbolic operations.

With the computer, this constitutive link to the past seems to have been removed. The historically evolved code is replaced by a system of rules that may also have evolved historically, but whose inner coherence and performance is not based on this origin, but on the purity of its construction. It should be remembered that liberation from tradition, authority and the past was one of the guiding ideals of the Enlightenment, which also underpins Leibniz's idea of an ideal language.

It is only against this background, I maintain, that the current high esteem for performativity takes shape: The computer appears as the realization of the utopia of saying goodbye to the past and the code and replace them with formalization; formalization appears as a code purified of the constraints of the past.

This can be seen in theory formation, for example when considerations on performativity directly polemicize against a view of language as code and play off the material act of utterance against the language system head-on.[27] My objection would be that the contrast thus posed is

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[25] "Medium is not a space or vessel for storing and preserving, but a stage for operating and acting." "It is about language, no longer as 'representation but rather as 'articulation.'" (Krämer, Sprachphilosophische Grundlagen, op. cit. (FN 20), p. 12 (transl. H. W.)). "The [computer] technology [...] creates artificial worlds, it enables experiences and processes that would not exist in an attenuated form without apparatuses, but would not exist at all. The productive purpose of media technologies is not to increase performance, but to create worlds." (Krämer, Die Eigensinnigkeit von Medien, op. cit (FN 15) (transl. and add. H. W.)). „Performativity is [...] to be reconstructed as mediality, the concept of media itself is to be dynamized." (Krämer, Sprachphilosophische Grundlagen, op. cit. (FN 20), p. 13 (transl. H. W.)).

[26] See FN 24.

[27] Krämer begins: "'Embodied language' means first of all: there is no language beyond the spatio-temporally situated execution of its vocal, written or gestural articulation" (Krämer, Sprache – Stimme – Schrift, op. cit (FN 21), p. 39), and then radicalizes: "There is no language behind speaking and writing." (Krämer, Sprachphilosophische Grundlagen, op. cit. (FN 20), p. 3 (transl. H. W.)). See also: Id.; König, Ekkehard (eds.): Gibt es eine Sprache hinter dem Sprechen? Frankfurt a. M.: Suhrkamp 2002).
At least the second formulation explicitly rejects, for example, the inclusion of language as a structure and as a memory phenomenon in a materialist media theory. With the dynamization of the concept of media (FN 24) and

illusory. Insofar as the act of utterance is repetition,[28] which Austin himself concedes for the performative, and repetition leads to conventionalization and thus to codification, it is the repetition itself that nourishes the code. The abstract polarity would therefore have to be replaced once again by a dialectical idea that cyclically relates act and code, performative individual utterance and system reference, to one another in the sense of an interaction.

For the theory of computers, this would mean that performativity does not stand alone in its case either; witted by the experience of other media, an attempt should be made to reconstruct the position of code and codification in the case of the computer; and to no longer be satisfied with the implicit answer that formalization has taken its place.

The third relationship that connects computers and performativity is even more direct. The computer is the first machine that combines the level of modeling, i.e. symbolic representation, and the control of real processes in a mechanical-technical way. Since the same model that simulates the environment can also be used to control the intervention in this environment, the computer is the first medium that is capable of empirically verifying symbolic constructs. And this too, I think, is a model of performativity.

The computer manages to make its signs actually become immediately practical. It creates a chain between symbolic-constructive modeling and, secondly, practical-empirical verification. And this model is obviously captivating. It is welcomed as the replacement of the question of 'mirroring,' representability of the world, and 'truth'; categories that media-critical, enlightened minds in particular are increasingly despairing of; 'viability' or operationality seem to be much more testable and materialistic; truth is replaced by pragmatic verification.[29] The dimension of performativity, one could say, has devoured the precarious question of reference.

The chain, of course, has prominent precursors; it imitates the approach of the natural sciences, which are cyclically linked to practical-technical applications and similarly base their model of truth, in addition to the aforementioned criterion of internal coherence, on practical verification through proof of technical functioning.[30]

However, this is a problematic type of evidence. Every ecological consideration teaches us that feasibility can in no way guarantee the validity of the assumptions on which the model is based. And that every instrumental action, precisely because it is instrumentally goal-oriented, must ignore a whole bundle of possible 'side effects.' In the terms of philosophy, this means that pragmatically sufficient correctness does not coincide with 'truth.' The systematic concatenation of the symbolic with the practical, as I reconstruct it here based on the concept of performativity, could therefore prove to be a very illusory solution.

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the abandonment of the storage aspect ("medium is not a space or container of storage and preservation" (ibid.)), any way back, even to an understanding of material texts as a storage device and a monument, is ultimately blocked. I have given my own consideration to language as a phenomenon of memory in: Winkler, H.: Docuverse. München: Boer 1997, p. 28 ff.

[28] "Attention must be paid to the iterability, the 'citationality' inherent in all our speech." (Krämer, Sprachphilosophische Grundlagen, op. cit. (FN 20), p. 10 (transl. H. W.).

[29] "[The] formal handling of symbols according to rules that make no reference whatsoever to the meaning of the symbols [...] also becomes the guiding principle of the epistemological ideal of rationalist philosophy, which consists in tracing truth back to correctness." (Ibid., p. 5 (transl. and add. H. W.)).

[30] „Science and technology do not actually form a union but become two sides of one and the same process, which in a certain sense is itself automated." (Gehlen, Arnold: Die Technik in der Sichtweise der Anthropologie [1953]. In: Id.: Anthropologische Forschung, Reinbek: Rowohlt 1961, pp. 98ff. (transl. H. W.)).

9. Conclusion

Let us now return to the starting point. I raised the question of performativity by first investigating the relationship between speaking and acting. The fact that the two fall apart and that acting, much more than speaking, is characterized by a moment of interest and necessity, latency of motives, irreversibility, practice pressure and blindness, constitutes its inner tension.

Against this background, however, it must appear problematic if the pressure of practice – via performativity – can now increasingly penetrate its counterpart, the symbolic systems. As little as there has ever been a complete 'freedom' of the symbolic from such pressure, it is just as clear that the symbolic only unfolds its actual power in deliberate decoupling from the sphere of practice. It would therefore be advisable to deliberately maintain this distance as a critical resource and to value symbolic systems with a low level of performativity and correspondingly high reference problems more highly than before.

Theorizing that abandons the counterfactual 'truth' in order to replace it with viability threatens to enter into an unwanted alliance with a social tendency that wants to commit every symbolic operation to practical relevance anyway. In an environment that welcomes the most narrow-minded technical achievement as a contribution to progress, regardless of the goals, and makes the reduced criteria of economic acting the yardstick for social action as a whole, it seems to me downright subversive to insist on the lack of consequences of symbolic operations. In this respect, it is not the sign with the strongest impact that would be interesting, but – paradoxically – the one that deliberately limits its effect. Only at a reduced level of performativity, ultimately against performativity, I think, is there room for a trial-action that is decoupled from actual consequences.

11 Metaphor, Context, Discourse, System

> "It would be good to imagine a new linguistic science that would no longer study the origin of words, or etymology, or even their diffusion, or lexicology, but the progress of their solidification, their densification throughout historical discourse; this science would doubtless be subversive, manifesting much more than the historical origin of truth: its rhetorical, languaging nature."
>
> (R. Barthes: The Pleasure of the Text)[2]

In 1954, Max Black wrote an essay on metaphor which marked the breakthrough to a completely new understanding;[3] based on an older text by I. A. Richards,[4] he sketched a theory which no longer regards metaphor as an 'ornament of speech,' but as one of the basic mechanisms of language in general, and which for the first time shows a way of describing metaphor as a formal structure, as a sub-machinery in the large functional framework of language.

In order to appreciate this change of perspective, one has to keep in mind that traditionally 'figurative' language was considered secondary and derivative; while literal meaning seemed vouched for and made reliable by convention, metaphor, leaving aside conventionalized metaphors, seemed to spring exclusively from the given situation and spontaneous inspiration. Both in the context of rhetoric and later in the context of poetics, metaphor was considered an indispensable means of expression that animated language and worked against its hardening, but the core of language was and remained its 'actual,' literal use. As a theory in the narrower sense, then, metaphor theory only begins where it breaks away from the traditional conceptualization of rhetoric.

In an attempt to clarify what 'figurative' language use actually was, rhetoric had developed two main conceptions of metaphor: the view that metaphor represented an implicit comparison, and secondly, that the metaphorical expression replaced a literal expression in the text, that the figurative sense corresponded to an 'actual sense' that could be recovered, for example, through paraphrase. The comparison thesis had the potential to provide a concise picture of the cognitive process that makes the understanding of metaphors possible, by making vivid the concrete back-

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[1] Published in German: Winkler, Hartmut: Metapher, Kontext, Diskurs, System. In: Kodikas/Code – Ars Semeiotica, vol. 12 (1989), no. 112, pp. 21-40; the German text is available online: https://homepages.uni-paderborn.de/winkler/Winkler--Metapher,-Kontext,-Diskurs,-System.pdf.

[2] NY: Hill&Wang 1975, p. 43 [1973].

[3] Black, Max: Metaphor. In: Proceedings of the Aristotelian Society, New Series, Vol. 55 (1954/1955), pp. 273-294.

[4] Richards, LA.: The Metaphor. In: The Philosophy of Rhetoric. NY/London: Oxford UP 1936, pp. 89ff.

and-forth between the figurative expression and its literal context; but whenever one tried to spell out the ‘comparison’ in concrete terms and attempted to name the common third that makes the comparison possible in the first place, not only did the aesthetic evidence of the metaphor fall by the wayside, but the plausibility of the model itself came into doubt. The second approach, which Black called ‘substitution theory,’ because it assumed an equivalence between figurative and literal language, exposed itself from the outset to the suspicion of depriving metaphor of its ‘image value’ and its specific surplus of meaning. ‘Creativity’ and ‘productivity’ of metaphor were accordingly emphasized mainly by those authors who ultimately refused to explain the mechanism of metaphor at all and believed that they could readily attribute it to ‘intuition’ or ‘spontaneity.’

Black proposes in his essay to describe the metaphor as an ‘interaction.’ The starting point is the disconcertment that the metaphorical expression does not seem to fit properly into its concrete textual environment; a metaphor, Black says, can only be understood if the difference is overcome and the meaning of the metaphorical expression and that of the context are reconciled. But how is this reconciliation to be imagined?

If we want to adopt an example that Black uses to illustrate his model, the statement that man is ‘a wolf’ sets in motion an interaction between the concept of wolf and that of man. The characteristics normally attributed to wolves ‘interact’ with the characteristics of humans; all the characteristics of the wolf that are applicable to humans are ‘projected’ onto humans in the metaphorical process. Humans are perceived through the traits and characteristics attributed to wolves. In addition to the notion of interaction and projection, Black uses the image of a filter: The ‘wolf system’ forms the filter through which certain characteristics of humans are emphasized and others are pushed into the background.

Black thus assumes that for every concept of language there is a system of features and properties that can be presupposed as knowledge about the concept’s semantics, and that this knowledge, in the case of its metaphorical use, is transferred to other contexts and to other objects. To emphasize that this is conventional knowledge, a social agreement completely independent of truth or falsity, Black does not speak of ‘properties’ but of a ‘system of associated commonplaces.’

And in both the notion of ‘filter’ and that of interaction, Black emphasizes that the metaphorical exchange does not leave the respective ‘systems of associated commonplaces’ untouched; on both sides of the metaphorical interaction there is a change and extension of meaning that Black sees as the specificity of metaphor.

The model outlined is a breakthrough in several respects. Black adopts from Richards the notion that the mechanism of metaphor splits the overall meaning of words into various individual components, properties, or features, some of which determine the metaphorical process. More clearly than Richards, however, Black shows that in each metaphorical interaction a system, i.e., an organized multiplicity, is applied to the new object. With Black it becomes apparent that each term is a ‘node in the network of language,’ and the metaphor in each case projects a whole network section, i.e. concrete semantic values and at the same time a structural model, onto the new, hitherto unfamiliar context. The question of a single axis of ‘comparison’ is thus resolved, as is that of whether the metaphor ‘substitutes’ for a concrete linguistic element, and whether a paraphrase can in each case exhaust its meaning.

A second crucial gain of Black’s work is that he sees metaphor as a mechanism between two concrete-material textual parts; a word or textual section is inserted into a materially concrete

con-text, whereupon the two ‘interact.’ Accordingly, Black refers to the metaphor as a ‘focus’ and the textual surrounding space as a ‘frame.’[5]

But Black’s theory also has serious problems. One of its main difficulties is triggered by the notion of ‘associated commonplaces.’ Commonplaces, as has already been said, is what Black calls all those ideas, images, and beliefs which can be presupposed as shared knowledge surrounding the individual terms; thus the understanding of the ‘wolf’ metaphor depends on knowledge of the common characteristics and properties of a wolf; and the totality of these properties forms the ‘wolf system’ which is metaphorically projected onto humans.

The ‘commonplaces,’ then, can be intersubjectively presupposed, they are organized in bundles, i.e. in subsystems, and they have the status of knowledge deposited around the terms of language. Exactly with this, however, the difficulty is already named: While the concepts themselves belong to language, the status of that associated knowledge remains completely unclear; the knowledge of the ‘commonplaces’ seems to occupy a sphere of its own, which appears isolated from language, but on which language nevertheless depends for its functioning. In Black’s own work, this problem remains unsolved; in his text, however, we find a concept that, although explicitly rejected by Black, can take us further: the notion of connotations.[6]

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Beardsley (1962) places the notion of connotations at the center of his theory. Beardsley writes:

> “You can start your explication [of the example-metaphor ‘briars’] either in object-language (talking about the characteristics of briars) or in metalanguage (talking about the connotations of the word ‘briars’). […] But though these two ways of speaking overlap, since in part the connotations of the word derive from what is generally true of the objects, they do not coincide completely.”[7]

The concept of connotations is a tremendous gain: In contrast to Black’s ‘commonplaces’ or the hasty jump to the ‘properties of objects,’ the notion of connotations is clearly restricted to the sphere of language. Now language itself seems capable of managing those ‘properties’ which only a moment ago had to be attributed to objects, and it becomes clear that there is at least the possibility that ‘knowledge’ in the concepts’ environments has its place in language itself.

The second advantage of the new term is that two types of properties can now be contrasted:

> “[…] the possibility of the metaphorical performance […] depend[s] upon a felt difference between two sets of properties in the intention, or signification, of a general term: first, those properties that (at least in a given sort of context) are taken to be necessary conditions for applying the term correctly in a particular sense (these are the defining, or designated, properties, or the central meaning of the term in that sort of context); second, those properties that belong to the marginal meaning of the term, or (in the literary critic’s sense of the word) its connotation[.] […] [W]hen a term is combined with others in such a way that there would be a logical opposition between its central

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[5] It is interesting that Black gains this clarity by reinterpreting a Richardsian conceptual pair: Richards’ argumentation, too, started from the concrete material con-text, but then, in order to be able to substantiate the terms ‘vehicle’/’tenor,’ subtly switched to a semanticized concept of context, which conceived of the overall meaning of the utterance, thus including the blank space which the metaphor fills.

[6] Richards did not use this term, instead he spoke of ‘aspects’ (loc. cit., pp. 93ff.).

[7] Beardsley, Monroe C.: The Metaphorical Twist. In: Philosophy and Phenomenological Research, vol. 22, no. 3 (Mar. 1962), pp. 293-307, p. 294 (add. H.W.).

> meaning and that of the other terms, there occurs that shift from central to marginal meaning which shows us the word is to be taken in a metaphorical way".[8]

Beardsley, then, sketches the model of a conflict at the level of features: The very fact that certain central features of the metaphorical expression do not fit the new context indicates that it is a metaphorical use and redirects attention to the peripheral features, which Beardsley calls connotations. The model of metaphor, then, is that of a ring-shaped application: The peculiarity of metaphor is that it omits central features of the applied concept but introduces the peripheral ones into the new context.

Taking up a second example Black uses, the phrase that 'the chairman plowed through the discussion' excludes almost all of the features that would normally define plowing; if one were to enumerate them, the agrarian sphere, the association of sowing and reaping, and the link to a particular implement would probably be indisputably such definitional features that could not be brought into the new context of a meeting or assembly. Applied, on the other hand, are certain peripheral features of plowing, such as the association that the activity of plowing 'turns the underside up,' notions of ruthlessness, force, and power, and possibly the connotations of 'regulating' and 'fruitful.'

Beardsley, then, completes the model laid out by Richards; but two things set a clear limit on Beardsley's theory: first, that he still mixes ontology and the linguistic level, speaking of 'connotations' but sometimes also – bypassing language, as it were – of the 'properties of things themselves;' second, that while he distinguishes the defining from the peripheral features of a concept, he does not relate his notion of connotations to that of denotation.

The reason for this omission – this startling consequence is now to be drawn – is probably that the model of metaphor as outlined is completely incompatible with the usual notion of a single meaning, a denotation in the singular. If the definition of metaphor depends on splitting the 'object' into 'features' (and these into defining and peripheral ones), then the 'denotation' of a word cannot designate a singular meaning but will have to depend on the defining features.[9]

It is self-evident that the signifier is in any case not confronted with a singular object which it designates; but all semantic models that want to insert a singular concept (a conception, idea) of 'the' tree between the signifier 'tree' and the multiplicity of concrete trees must be opposed by the metaphor in its irreducibly plural meaning as a structural model. Denotation is plural: The notion of denotation can mean nothing other than an effect of those 'defining features' that control the applicability of a concept to concrete contexts and to concrete objects.

Of course, semantic theories have been developed which seek to describe a plural conception of denotation; thus there is the 'component analysis' originating with Jakobson and Hjelmslev and leading to the prominent theory of 'semes;' a theory which assumes the existence of a finite number of 'atomic' components which, when combined, constitute the meaning of lexemes (i.e. words). And there is a second, more epistemic/skeptical direction,[10] which conceives of meaning as composite, but as an inconclusive and ultimately uncontrollable structure in the teeming of its components.

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[8] Ibid., p. 299.

[9] Lyons' 'Semantics' first distinguishes the notion of 'sense' (as a network structure within language) from that of denotation, and then defines the latter as the relation between a lexeme (i. e. a word) and the class of extra-linguistic objects denoted by the lexeme. Lyons, then, does not mention the fact that classes on the side of objects are not given, but are a result exclusively of the structuring performance of language itself, i.e., of those 'features' which are managed by the 'sense-relations.' A correspondingly puzzling role is played by the completely abruptly introduced notion of 'applicability,' which is neither referred back to the sense relations, nor to possible *criteria* of application. (Lyons, John: Semantics. Vol. 1, Cambridge: UP 1977, pp. 204ff.).

[10] Scriven or Pap are mentioned in Beardsley.

Proceeding from the model of metaphor referred to so far, I would argue, a different perspective on the question of the constituents of meaning is possible. Thus, in my opinion, quite contrary to the terminology of the discussed authors, there is neither a possibility nor a necessity to draw a line at all between the plurally understood denotation and the connotations. The 'definitional features' (denotation) differ from the 'peripheral' connotations by degrees at best; and the observation of precisely the language change initiated by metaphorical use shows how quickly formerly peripheral features can move up to central features, and central features can drop off into the connotative space of meaning.

There may be 'more important' and 'less important' partial meanings; but 'important' and 'less important' are categories exclusively of function; of function within the framework of a model which needs clarification, and which seems to me more likely to be clarified if the functional differences do not already appear guaranteed in the choice of words.

A first proposal for redefinition, then, would be to dispense with the distinction between denoting features and connotations altogether, and to call both defining and peripheral features 'connotations.' 'Con'-notations because together they control applicability to contexts, and thus 'meaning.' The proposal to include also the defining characteristics in the concept of connotations returns to a concept that had already been advocated in 1843; J. S. Mill,[11] who introduced the separation into denotation and connotation in the first place, still equated the concept of connotation with that of the 'intension' of meaning, thus calling all those characteristics connotations that make it possible to recognize individuals as elements of a class, to subsume them under a concept. (He correspondingly called denotation the extension of meaning, the relation to the total set of denoted objects).

In Ogden and Richards,[12] however, this definition is already lost when Mill's notion of denotation is differentiated into the notions of denotation and reference, and the referential meaning is contrasted with an 'emotive' one, which now forms the domain of connotations. Thus, the concept of connotations will have to be defended both against its colloquial meaning and against a theoretical tradition that has moved far away from Mill; connotations in the sense sketched here are neither 'emotive' nor indeterminable, nor do they 'add' to a core of meaning that obeys different laws than they do themselves.[13]

A first test for the new concept is another partial problem in the field of metaphor: Peculiarly, none of the models referred to incorporates the literal meaning into the investigation. Except for a remark in Richards,[14] literal usage appears throughout as the fixed, stable background on which figurative language depends, and which the intervention of metaphor at best sets in motion on a case-by-case basis.

Against the background of the presented metaphor theory, however, the literal use is initially nothing but a borderline case of the metaphorical: If the metaphor deliberately violates some of the features that are usually prerequisites for its application (in the case of 'plowing,' the agrar-

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[11] Mill, J. S.: A System of Logic. London 1843.

[12] Ogden, C. K., Richards, I. A.: The Meaning of Meaning. London: Routledge & Kegan 1923.

[13] The notion of a connotation parasitically attached to the 'actual meaning' has survived the passage from linguistics to semiotics almost unscathed. Thus, for example, in the 'Elements of Semiology' (1963) Barthes calls 'connotation' what he had still called 'myth' in the 'Mythologies' (1957), and he uses the same graphic representation for both terms, in which a proliferating connotation seems almost to crush the 'actual' language. (Barthes, Roland: Mythologies. NY: Farrar 1972/1991, p. 113; B., R.: Elements of Semiology. NY: Hill&Wang 1968/1986, p. 93).

[14] "Literal language is rare outside the central parts of the sciences. We think it more frequent than it is through the influence of that form of the usage doctrine which ascribes single fixed meanings to words[.]" (Richards, op cit., p. 120).

ian context), the literal use is accordingly characterized by nothing other than a relative harmony of connotations.

It is important to emphasize that this harmony, even in the case of literal use, is always only a relative one; any application of a term to a context excludes dimensions of meaning that this term would have in other contexts, so never are all 'connotations' actualized, some are always excluded as 'inappropriate.' What is more: Of course there is a systematic connection between the connotations already found in the context and those that the newly applied term brings into this context: A part of the connotations will have to match in order for the term to appear 'appropriate' (redundancy), a certain part will be newly added by the term (information), and a third part will fall victim to the application and be excluded as 'inappropriate.'[15] (An example of this mechanism is 'the car in the child's hand,' a formulation that neither contains a metaphor nor makes 'car' a polyseme for large and for small cars. It is a literal usage which, like all contextual applications, excludes certain dimensions of meaning; at most, one could speak of a borderline case, insofar as unusually many and unusually important connotations are excluded.)

The fact that metaphor excludes central dimensions of meaning is stated by Black and by Beardsley; but that this mechanism applies to literal use in quite the same way can only really be made plausible if one follows the proposed redefinition, abandons the notion of a singular denotation, and includes 'defining features' in the 'connotations' as well. Specific to the metaphor, then, would be only that even those connotations are excluded that would have been considered indispensable in the majority of all contexts.

3

This formulation already suggests a quasi-statistical model; and indeed one will have to resort to notions of statistical accumulation if one wants to clarify the relationship of the 'central' to the 'peripheral' connotations in more detail.

Where – first the more general question – do the connotations, the dimensions of meaning of a word come from in the first place? If together with Ricœur one excludes the assumption that there is "a so-called original, or fundamental, or primitive, or proper meaning,"[16] the connotations can only be thought as a kind of *deposit of past discourses*.

This initially simple idea, an idea, however, that has far-reaching consequences, can already be found in Bühler's theory of language, written in 1934.[17] The fact that such an early witness is called upon here is no coincidence: Bühler, who was one of the first to react to the shock that Saussure had caused in German linguistics, was faced with the task of mediating in some way between the new idea of a synchronic linguistic system and the traditional diachronic view. One of his most compelling theorems, therefore, is that he constructed a mechanism of transition linking individual utterances – concrete discourses – to the system of language.[18]

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[15] In semantics, these differences have been discussed via the problem of 'selection restrictions' (Lyons, op. cit., pp. 265, 327).

[16] Ricœur, Paul: Metaphor and the Main Problem of Hermeneutics. In: New Literary History, no. 6 (1974/75), pp. 95-110, p. 99.

[17] Bühler, Karl: Sprachtheorie. Die Darstellungsfunktion der Sprache. Jena 1934. Engl.: Id.: Theory of Language: The Representational Function of Language. Amsterdam/Philadelphia: John Benjamins 2011. Despite the publication date, Bühler was not part of the infamous Nazi German Studies; he taught in Vienna, was arrested in 1938, and emigrated to the United States in 1940.

[18] He thus takes a problem into consideration which eludes both the – subsequently dominant – synchronic perspective and the traditional diachronic one, and which unfolds an unexpected topicality in a theory of discourse which today is still more of a linguistic-philosophical rather than already a linguistic problem.

Bühler started from the observation that texts fixed in writing function relatively independently of context primarily because the "factors of the synsemantic surrounding field" necessary for their comprehension "are largely preserved [in the text]".[19] Self-contained texts, then, aim for disengagement from their contexts and have a tendency to draw into themselves what, in the case of situational utterances, the situation would contribute to the meaning. In these mechanisms, Bühler sees a model that recurs at all levels of language; and he sketches a picture of language as a system that reifies typical contexts in its own structure.

> "[I]t can be, yes, it must be the case to a sufficient degree that the language (la langue) to some extent gives up the stage of an amoeba-like plasticity from speech situation to speech situation in order to allow the speaker in new respects productivity on a higher level with a partially solidified, congealed device[.]"[20]

Bühler thus describes language as an apparatus that absorbs the situations of its use in order to make them available for new use in a conventionalized way.

According to Bühler's model, then, the 'connotations' would be a result of concrete utterances (or discourses) in the past; they would be a kind of precipitation left on the words by the concrete uses in the discourse. Each individual use applies something of the complex contextual meaning of the sequence in which the word stands to the individual word, each individual use leaves a trace; this trace, however, will only endure if subsequent discourses take it up and confirm it; in all other cases it will be lost in the noise of discourse. From Bühler's point of view, meaning is a phenomenon of repetition: a statistical effect over the immense amount of parallel discourses.

And conversely, it is the concrete contexts that 'inform' the words; the discourses 'work on the system,' build meanings and erode meanings; initially completely independent of whether the use is metaphorical or literal.

The decision to dispense in principle with the distinction between denotation and connotation proves itself, I think, in the image of statistical accumulation: If the connotations are deposits of concrete discourse, one will only be able to distinguish between those that are frequently and those that are more rarely affirmed. The 'necessary' features, then, as the dictionary definition enumerates them, form a kind of 'core' in a much larger set of connotations; at the margin of this set are found completely ephemeral or idiosyncratic connotations without intersubjective meaning; finally, the connotations that are crucial in the context of metaphor would be found in the middle zone between the core and the margin...

A second gain from the idea of quasi-statistical accumulation is the notion that it is *typical* contexts that enter into the structure of language and into connotations; it is statistical accumulation that creates the compression pressure that suggests the idea that the singular signifier is confronted with an equally singular correlate. The hardness and relative stability of the terms is not given, or guaranteed, for instance, in the material hardness of the signifiers; it is the result of *hardening* through repeated use.

Finally, a third implication draws attention to the mostly neglected problem of contextual quantities. If together with Black one restricts context to the physical text in the surrounding space

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[19] Bühler, Theory, op. cit., p. 190 (add. H. W.).

[20] Bühler: Sprachtheorie, Jena: Gustav Fischer 1934, p. 144 (transl. H. W.). The English version of the book puts it, in my opinion, far more cryptically: "[I]t may be, indeed it must be the case that in some points language (la langue) departs from the stage at which it has an amoeba-like plasticity from speech situation to situation, that it abandons this plasticity in order to make it possible for the speaker to be productive in a new way and on a higher level; the implement of this higher productivity is that which has congealed or solidified[.]" (Bühler, op. cit., p. 161).

of a word or utterance, then it becomes more than important whether there is concretely much or little text in the surrounding space.

For one, the individual discourse (the individual utterance, the single 'work') creates an interior space in which, as long as it exists, different rules apply than in the space of discourses in general; the experience of literature shows that new connotations can be established and stabilized within a work relatively quickly.

Secondly, following the notion developed in Jakobson and then in Lacan, the distinction between metaphor and metonymy depends on whether both metaphorically/metonymically related elements are present in the context, or if one displaces the other from the context; a model that makes any sense only if one quantitatively constrains the notion of context.

And thirdly, the problem of contextual quantities is the one that maintains the most intense connection to any notion of discourse power; if the construction of linguistic meaning indeed obeys a quasi-statistical accumulation, contextual quantities[21] become an immediate power factor on the terrain of language.

For the narrower field of metaphor theory, two initially confusing consequences result from what has been said. First, the established notion will have to be abandoned that it is metaphor alone that leads to the enrichment of language through connotations, that it alone keeps language 'alive.'[22] For, of course, connotations are also accumulated in the 'literal' use of words. Since there is no context in which only redundant meanings occur, there will always be a part of the contextual meaning that will act back on and leave its 'trace' on the applied term. And furthermore, the actualization of the redundant connotations will also have to be conceived as 'work on the system;' as conservative work that confirms the established central connotations, 'nurtures' them, and works against their natural decay.

The specificity of metaphor, then, would have to be modified: In contrast to literal use, metaphor is characterized by the fact that it forces one to go through the connotations consciously and individually; the failure of the usual, central partial meanings forces an examination of which of the connotations are applicable in the context and which are not. This examination happens at lightning speed, almost simultaneously, and as such is of course not conscious; its result, however, is a branched complex of individual conceptions, which is pictorially-simultaneously adjusted to the new context.[23] The impression of 'freshness' and 'liveliness,' which the metaphor evokes, thus does not arise because the individual connotations themselves are in that moment produced, but because their selection, their combination and integration into a complex is 'newly,' i.e. contextually established.[24]

The second characteristic of metaphor that one will have to abandon is the idea that while the path of metaphor is 'pre-paved' in the connotations, its overall meaning sovereignly transcends the conventionalized. However, if the metaphorical process is described, as outlined, as a selection and recombination of conventionalized connotations, the metaphor's surplus of meaning, at least as far as the mechanism of its production is concerned, is no different from that in the case of literal application. The metaphor brings connotations into the context anew (those

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[21] ...and also the question of how many copies are printed…

[22] The notion is found, for instance, in Richards (op. cit., p. 90) or, even more extremely, in Beardsley's more than peculiar explanation of the way in which metaphor acts back on the system of language (op. cit., pp. 302ff.).

[23] Perhaps speaking of metaphor as a linguistic *image* at all owes itself only to this impression of a simultaneity of different partial conceptions. As is well known, the characteristic of the image (in contrast to language, for instance) is that it presents its information simultaneously.

[24] Meant here are new, 'creative' metaphors; of course, metaphors can in turn be conventionalized.

that are neither redundant nor excluded as inappropriate), and it carries the trace of the connotations actualized in the context out of the context.

A third notion that recurs in the theory of metaphor, however, is worth upholding: For even if one conceives of the meaning of words not as rigid but as the result of congealment, it is metaphor that brings 'movement' to these congealed meanings. But this too, it is worth insisting, not thanks to a genuine 'creativity,' but in an extremely reduced, technical sense: Namely, by forcing us to examine the individual connotations for applicability in the context, metaphor dissolves – linguistic theoretical reflection essentially only traces this path – the appearance of a rigid or even singular meaning. A metaphor can be concretely understood (or produced) only when certain components of meaning are perceived as dispensable, when the word is thus perceived as composite, as an interplay of its connotations. Thus, the experience of metaphor liquefies again those components of meaning which, in the case of literal use, appear to be drawn together into a solid crystal structure. 'Movement' in this sense, then, is first of all the movement of connotations, a movement inside the words. The metaphor, accordingly, is the mechanism that forces the attention to switch to the micro-level of partial meanings.

Most of the time, however, when metaphor theory speaks of the dynamizing function of metaphor, it is not the dynamization of the partial meanings that is meant; more obviously, metaphor creates 'movement' in the vocabulary, insofar as the metaphor seems to leave its 'place' and vagabond into another sphere of meaning. This idea is most clearly formulated by Richards, who calls metaphor "a borrowing between and intercourse of thoughts, a *transaction between contexts.*"[25] The first striking thing about this formulation is that only one of the two contexts seems to be a material-concrete con-text, namely the one in which the metaphor occurs; but that the second context, from which the metaphorically vagabonding expression originates, has a much less material character. This second concept of context is rather based on the idea of a quasi-topological division of the vocabulary into thematic spheres, as developed by Trier[26] in his theory of word fields.

Initially, then, this second 'movement' of metaphor seems to be a macro-level movement between words. Metaphor moves from one sphere of vocabulary to another, and moreover sets the vocabulary itself in motion by crossing and, at least in the long run, undermining the boundaries between the spheres. However, if one dissolves Trier's concept of the 'word field,' which, for its part a metaphor, suggests a two-dimensional expansion of the vocabulary, it becomes clear that Trier's concept of spheres designates precisely that knowledge of typical contexts which – according to the idea developed here – belongs to the central connotations that every word carries with it.

Both types of 'movement,' then, the one inside words and the seemingly external migration of the metaphor between spheres, are closely related. And the discussion of Trier makes clear that the 'transaction between contexts' described by Richards addresses distance or proximity relations in vocabulary, which, if one does not want to conceive them simply metaphorically-spatially, must be traced back to proximity relations in concrete material con-texts, proximity relations that repeat themselves and pass by way of statistical accumulation into the knowledge of 'typical contexts' that words make available in a conventionalized form, as connotation.

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[25] Op cit. p. 94 (emph. H. W.).

[26] Trier, Jost: Das sprachliche Feld. Eine Auseinandersetzung. In: Neue Jahrbücher für Wissenschaft und Jugendbildung. No. 10, 1931, pp. 428-429; c.f. Lyons, Semantics, op cit., pp. 250ff.

The notion of connotations and the insistence on the connection between language system and discourse, then, seems to be especially useful in relating the extremely heterogeneous claims that play a role in metaphor theory to a model that is at least in outline consistent.

Two implications of what has been said so far, however, are unsatisfactory: First, the notion of accumulation, and to a lesser extent that of connotation itself, evokes once again the traditional idea that the words of language are somehow 'full' and rest saturated – saturated in discourse, though no longer with 'meaning' – in themselves; according to the traditional notion of the fullness and 'presence' of meaning, words do 'represent' the object, but compensate for its absence by the fullness of a ramified knowledge. Such a notion, almost needless to say, no one will be able to seriously defend after the poststructuralist critique of language. The plausibility of what has been said will therefore depend on whether the notion of connotation can be reconciled with the notion of language as a network of negative relations.

The second point which has not been very satisfactory so far concerns the concept of context. This concept has hitherto been restricted only to the extent that it should encompass the material con-text, but not, for instance, the extra-linguistic situation or the conditions of utterance. But if the connotations realized in context drive metaphorical application, it would be desirable to know how contextual meaning, other than added up from word meanings, can be conceived.

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The concept of connotation[27] has the problem of suggesting 'fullness.' The connotations appear as a kind of possession of the words, as an accumulated wealth; the words, conversely, as if they accumulated something in order to then rest in themselves. The shortcoming of this conception lies above all in the fact that it contains unspoken ontological implications; the image of fullness correlates with the assumption that language reaches out of itself and enriches something that is not language itself, experience, for instance, or even immediate reality.

The critique of such ontological presuppositions is the core of structuralist and post-structuralist language theory. And step by step, the insistence on the systemic character of language as an exclusively self-supporting network of relations, and on the signifier as the only accessible, because material, side of the sign, has led to a purification of terminology, which can also be traced in metaphor theory. Against the same background, the argumentation presented here has emphasized that, crossing over from 'properties' to 'connotations,' Beardsley's theory took an important step towards restricting the consideration to the terrain of language.

The question, however, is also reproduced in the concept of 'connotations;' for what is the status of the seemingly irreducible qualitative knowledge that the connotations hold? And how does this knowledge relate to the negative-differential network of language? Do the connotations form a kind of parasitic structure that enriches the net with qualities coming from outside? That the concept of connotations does not necessarily have that blurred emotive meaning which is attached to it in everyday language has surely become plausible. But what can be said about connotations when – worse than in the case of the signified – they do not seem to be matched by a material signifier? Questions of such scope probably cannot be answered satisfactorily. But a roughly sketched answer will have to be attempted, if the concept of connotation is to be protected from its unfortunate conceptual history, and from the accusation that it restores the signified.[28]

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[27] …just like the concept of denotation and meaning…

[28] (Note on translation (2024)): In later texts I have actually advocated a revaluation of the signified. In 1989, when I wrote the metaphor essay, post-structuralism ruled the roost, and the signified was simply taboo.

The starting point is once again the dictionary definition. A dictionary entry describes the meaning of a term by listing "salient features",[29] characteristics, and typical contexts. The dictionary definition, then, consists of words (and words only) and, except for rudimentary syntactic structures, it functions largely additively, i.e., gets by with a simple stringing together of words. A dictionary entry thus defines a term by referring from this term to a certain number of other terms, and – it traces in these references exactly those partial meanings which have been called above the 'central connotations' (or denotation in the plural).

Only seemingly, then, does one change levels when one passes from a term to the analysis of its partial meanings, its properties, or its typical contexts: The dictionary definition shows that the connotations are themselves lexicalized, that they are *words* like the term itself; part of the same symbolic system, or at least a certain type of connection that exists between the words of language.[30]

Connotations, in the technical sense proposed here, are words. Other words, seen from the perspective of the word that is currently under discussion. The connotations install a star-shaped reference structure for each term (which the dictionary definition only traces): Each individual term points (with varying intensity) to a number of other terms; the respective references/relations overlap reciprocally or they do not overlap; in their totality, at any rate, they form that 'net' which pushes itself up from the ground by the force of net-relative references alone and which has been the binding image for language since Saussure.

The false notion of 'fullness' thus seems to dissolve relatively effortlessly into a structure of network relations; the connotations are not 'possessions' of the respective term but are themselves concepts and to that extent possessions of themselves. Terms function as connotations where they are referenced in the network; all terms together are managed by language.

In the model sketched here, the notion of certain reference qualities, which is likewise rejected by structural semantics, proves to be incomparably more persistent.[31] The fact that the dictionary definition contains not only isolated terms but also rudimentary text parts and syntactic structures is less irritating[32] than the fact that we have to assume references/relations of different intensity. Going back to the notion of quasi-statistical accumulation, according to which the central connotations were distinguished from the peripheral ones above, 'intensive' references in the network would be those that are frequently confirmed in the discourse. (It is interesting to note that the character of peripheral, rarely, or never confirmed connotations changes completely as soon as the connotations are conceived as references in the network of language: Thus, in principle, no two words can be imagined that do not maintain any – even potential –

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[29] Lyons, op. cit, p. 209.

[30] Whether the connotations are actually fully lexicalized is an interesting linguistic-philosophical question, especially for the 'peripheral' ephemeral or idiosyncratic connotations; Lyons, for instance, discusses the problem and explicitly warns against equating, for example, the component 'male' with the corresponding lexeme (op. cit., pp. 318f.). Any model, however, that assigns to the components of meaning their own sphere outside of language would have to show how, if not through the structuring performance of language, this sphere acquires its form.

[31] That structural semantics also finds it extremely difficult to make the network of language plausible as exclusively binary-oppositional/negative/functional is evidenced by a skeptical statement by Lyons: "Oppositions are drawn along some dimension of similarity." (op. cit., p. 286 (emph. H.W.)).

[32] Although no theory exists as to the manner in which syntactic structures have developed from, say, originally lexical ones, it is nevertheless plausible to assume that syntax must be regarded as a kind of shortcut, a spin-off, of semantic structures that are particularly frequently actualized in discourse. So the basic syntax-pattern of Western languages (subject-predicate-object) mimics the model of *action*.

relationship; for absolutely any pair of words a context can be constructed that causes their bundles of connotations to interact[33]).

Without the idea of a hierarchy of references, therefore, the model represented here cannot do; but the question about the qualities of references is reversed, so to speak: What the language user finds as 'proximity in the network,' as a reference necessary for definition, or as 'similarity' in the vocabulary, is a quasi-statistical, i.e. a quantitative effect over the totality of discourses.

The model as a whole, it should be noted, returns to a concept of Saussure's that has been particularly harshly criticized in the reception history of his texts. In the concept of 'association' Saussure had tried to grasp the proximity relations in a language's vocabulary; whereby the decision for the dazzling concept of association corresponds with the fact that Saussure counted among the paradigmatic series also those that are built up along semantic similarities.

The concept of association was accordingly attacked on the one hand as 'psychological' and on the other hand rejected as a shortcut towards the signified. Both accusations, I think, are true; from the perspective of the model proposed here, however, a peculiar reevaluation would arise if it could be shown that while linguistics cannot benefit from the psychological/psychoanalytic concept of association, the latter, conversely, could benefit from a linguistic-theoretical clarification.

For it is indeed striking that the concept of connotations, developed here via the mechanism of metaphor and the relationship between discourse and system, retains a certain closeness to the everyday notion that a connotation, or indeed an association, is what comes to mind for an average member of the linguistic community in relation to a given term. Associations, however situational and individual they may be in each concrete case, certainly make use of those paths in the network that discourse has carved into the system and that literal application and, more conspicuously, metaphor utilize. So as unclear as the concept of 'association' is, its key position between psychoanalysis and linguistics could contain, in miniature as it were, the program that step by step gains contour in the psychoanalytic/linguistic theories of Jakobson, Lacan, Metz,[34] and in a very different way in Lorenzer.[35]

And for yet another reason it seems to me worthwhile to reconsider the reviled notion of associations: It is precisely the 'semantic' ones among Saussure's paradigmatic series that have the power to bring into the realm of the imaginable not only the possible exchange in a context, but also a covert co-presence in the context of unrealized words. The connotations of a word, and this is taken for granted by everyday consciousness, 'resonate' whenever the word occurs. Thus, if one understands the connotations as references to other words, as suggested here, one will have to conclude that these words – although, as Saussure says, "in absentia"[36] – by being concealed and 'represented' by the given word are present after all. The 'representation,' however,

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[33] It was one of the discoveries of the surrealists, Lacan writes, "that any conjunction of two signifiers would be equally sufficient to constitute a metaphor," only to object scornfully, "except for the additional requirement of the greatest possible disparity of the images signified, needed […] for metaphoric creation to take place." (Lacan, Jacques: The agency of the letter in the unconscious or reason since Freud [1957]. In: L., J.: Écrits. A selection. London: Tavistock 1977, pp. 146-178, here: p. 156).

[34] Metz, Christian: The Imaginary Signifier. Psychoanalysis and the Cinema [1973-76, 1977]. Bloomington (USA): Indiana UP 1982; the fourth and most interesting part of the book tries to develop a theory of the cinematic metaphor (op. cit, pp. 149ff.).

[35] Cf.: Lorenzer, Alfred: Sprachzerstörung und Rekonstruktion. Vorarbeiten zu einer Metatheorie der Psychoanalyse. Frankfurt am Main: Suhrkamp 1970.

[36] De Saussure, Ferdinand: Course in General Linguistics [1916]. Lasalle, Illinois: Open Court 1986, p. 122.

is the role of the sign in general; and there would result a quasi-metonymic relation between the present word and the absent/present words to which it refers.

If we return to more solid considerations, there are two questions in particular that require additional clarification: the question of what the contextual juxtaposition looks like concretely, which turns into the conventionalized proximity relations of the vocabulary, and the second question, already posed once before, of where to conceive of the material place that the connotations occupy.

Structural semantics, as is well known, takes the network relation for granted. But if one claims, as outlined here, a regular mechanism between discourse and system, the question arises what 'proximity in discourse' and 'proximity in context' actually mean, if this is to result in the conventionalized proximity in vocabulary. This question, too, cannot be answered completely; first, however, three levels of contextual proximity can be distinguished: the simply additive stringing together, which has already been mentioned in connection with the dictionary definition; the one- or multi-word sentences of small children would be an example of such contiguity, and even the language of military orders shows only rudiments of syntactic or morphological structures. The second, infinitely more complicated level is that of syntax. The syntactic structure distributes weights by itself and produces meanings that are regular but not a simple interaction effect of the lexemes involved. The third level represents an extreme of such syntactically produced meaning: The explicit definition is able, with syntactically minimal effort, to concatenate any signifier with any connotations.[37] All three mechanisms produce contextual proximity in specific ways; the simple positioning next to each other certainly to the least degree, the explicit definition to the strongest, while the semantic effect of the different syntactic patterns is probably the most difficult to evaluate.

In the history of theory, there have been two attempts to describe the semantic effect specifically of syntagmatic ordering: the theory of 'collocations' by Porzig[38] and that of J. R. Firth,[39] who used the same term. Porzig was interested, for example, in the connection between the lexemes 'tongue' and 'lick,' which occur extremely often in the same context and frequently in the same syntactic dependency. Firth asserted a level between syntax and the extra-linguistic situation, which he regarded as the real source of lexical meaning. Neither theory, however, fully solved their problem, nor gained wider influence.[40]

The last question to be raised in the immediate context is that of the material location of connotations. It has already been said that it would be futile to try to find them in the individual material signifier,[41] and doubtlessly their material equivalent will be equally impossible to find

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[37] It should be remembered in any case that above the syntax only contiguity, i.e. the non-hierarchical sequence of syntactic units, prevails. Contextual proximity above the level of the sentence, then, would again be described as a sequential order, and quantitatively, for instance, via distance values.

[38] Porzig, Walter: Wesenhafte Bedeutungsbeziehungen. In: Beiträge zur Geschichte der deutschen Sprache und Literatur, no. 58 (1934), pp. 70-97.

[39] Firth, J. R.: Papers in Linguistics. 1934-51. London: Oxford UP 1957.

[40] Which is certainly also due to the long period of one-sided orientation of linguistics to the synchronic perspective of investigation; Firth and Porzig, from today's perspective, can be addressed as avant-gardists of discourse theory, despite all the eccentricities of their texts.

[41] In any case, talk of the 'signifier' often has the weakness of claiming its material hardness and evidence also for those mechanisms of language that cannot be shown in the individual signifier that is concretely and materially present in the text. In many cases, the notion of the signifier becomes a metaphor for the side of the language in general that is averted or withdrawn from consciousness.

in the individual current discourse, insofar as – according to Bühler's model – the conventionalized meaning is precisely that which no longer needs to be produced in the individual context.

And yet, the thesis presented here, which asserts a systematic mechanism between discourse and system, depends entirely and completely on whether a material carrier of the connotations can be named. The answer that will be attempted here is split into two answers: First, the connotations are materially represented in the discourses of the past.

Material *syntagmatic* combination, material proximity in the discourses of the past is, in the model represented here, the indispensable precondition for *paradigmatic* proximity to emerge in the network. Or, more clearly still and brought down to a formula: What was never syntagmatic sequence cannot appear in the present as connotation, as the partial meaning of a word.

The central mechanism of language is that syntagmatic proximity turns into paradigmatic proximity.

The hardness of this determination will scarcely be sufficiently emphasized. It solves the puzzle left by Saussure, who had simply juxtaposed syntagmatic sequencing and 'associative' (paradigmatic) sequencing as equal 'axes,' and for the first time it gives space to the fact that only the syntagmatically ordered textual elements are materially accessible.

The second answer, imprecise as it must remain, is closely related to the first: As far as the present is concerned, the material 'locus' of connotations is distributed among that myriad of *empirical memories* that have participated in past discourses, captured syntagmatic proximities, and received their form through past con-texts. Even in this distribution among empirical minds, meaning is a phenomenon of redundancy.

To describe the connotations as a network of references and the important connotations thus as 'facilitation/priming' may be reminiscent of the physical synapses of the brain – neurophysiology has so far failed to provide a more material answer. The argument put forward here gets by with a much simpler conception of memory and requires of it only that it make the experience of past discourses available to current discourses.

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If one now wants to summarize what has been said to a single point, then, in complete contrast to everyday understanding, the central point of the metaphor appears to be – convention. At first, the buildup of connotations follows the rules of conventionalization. It has been said that already in the individual text it can be observed how new connotations are installed exclusively by the mechanism of syntagmatic sequencing and stabilized by the fact that the continuation of the text confirms them. Such connotations, however, initially have validity only within the respective text; they are therefore to be sharply distinguished from those connotations which at some point in time arose in the same way, but were then taken up by text after text until they were finally established intersubjectively and had become part of language itself. Connotations of this second type precede the individual text. (The metaphor, this brief sideways glance may be permitted, uses connotations of both the one and the other kind; in the concrete analysis, therefore, the already conventionalized part must be strictly set apart from those connotations which the text itself has built up). Conventional-regular, then, is the mechanism, and conventional are the connotations themselves; they are intersubjectively-binding, if one follows the definition proposed here and understands as 'connotations' all those partial meanings that make up the structure of a word, its relation to other words, and in essence: its definition.

Completely regular, secondly, is the mechanism of context application. Both literal and metaphorical usage are subject to the same law that words can only be applied to contexts along certain 'appropriateness criteria.' The application, then, must be prefigured by certain connota-

tions shared a priori by the context and the newly applied word.[42] Literal usage may be characterized by a relative harmony of connotations, while metaphor allows for conflicts even of the central connotations; but metaphor can function as a 'filter' (Black) only by highlighting among the possible connotations those shared by the context and the metaphorical expression.

Likewise and thirdly, the "deformation" that the conventionalized inner structure of the terms undergoes in the concrete context takes place in a regular way. Never, this has also been said, are all the connotations realized in the context that make up the conventionalized scope of meaning of a term; the connotations of the syntagmatically arranged terms are always reconciled with each other, and connotations that appear to be 'inappropriate' in the context are excluded.[43]

It was the syntagmatic proximity of other terms and the matching of connotations that, following the model outlined here, 'inform' the term and leave that 'trace' which, when confirmed, can turn into conventionalized proximity, proximity in vocabulary, paradigmatic relation.

And there is a fourth part to the clockwork of metaphor: If as its specific feature and as the essential difference to literal usage the fact was mentioned that the failure of central partial meanings forces us to go through the peripheral connotations one by one, to check them for applicability in the context and to draw them together to form that new constellation which constitutes the meaning of the metaphorical expression in the context, then this process can also be imagined as completely regular. Compared to literal use, the metaphor carries disproportionately more complex information into the context; but also this surplus seems to be describable in its structure without having to resort to terms like 'spontaneity' or 'creativity.'

Despite a multitude of unresolved subproblems, the picture of an almost closed mechanics emerges precisely on that terrain of language which seemed to almost completely defy theoretical description; metaphor, and similarly the concept of connotations, seemed to stand for the fact that the spontaneity of speech was irreducibly subjective, and that language could not be dissolved into rules and practices.

Peculiarly, however, insisting on the spontaneity and creativity of language had the consequence of overestimating the reliability of the linguistic system: As long as the 'connotations' could only be added to a fixed, guaranteed (and singular) denotation, as long as they could be set off against the 'actual' meaning as a subjectively luxurious sphere, 'language' seemed to be reliably protected from its uncontrollability (the unmanageability of the innumerable parallel discourses).

Undoubtedly, the connotations are indeed unmanageable. The conventionally and intersubjectively/redundantly hardened connotations at the core of each term are surrounded by a corona of far less reliable partial meanings; partial meanings which (sporadic, or in the process of hardening or dissolving) cannot be redundantly presupposed in all empirical memories. Each individual term dissolves towards its periphery and takes on a personal coloring from memory to memory (and from text to text); what appears as a 'core' is stabilized only via social practice (statistical accumulation) and is constantly threatened by that language change which penetrates the core of meaning via the peripheral connotations. Any theory of language will have to face the fact that this imponderability and intersubjective 'fuzziness' afflicts the core of language itself[44] and cannot be expelled from this core by the means of a simple definition ('connotation' versus 'denotation').

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[42] Of course, the selection restrictions themselves are more complicated in structure, but they are not the issue here.

[43] Black used the term 'interaction' which, as shown, applies to metaphor and literal usage in the same way.

[44] The theory of seme, for instance, could be accused of trying to deny this fact.

That metaphor, of all things, forces a notion of connotation that undermines the apparent certainty of meaning is anything but accidental: By redirecting attention from the seemingly secure middle to the manifold partial meanings, metaphor offers the paradoxical experience that a constellation of partial meanings can be mechanically-regularly applied (and intersubjectively understood) without this bundle of connotations being quantitatively completed or spelled out in an intersubjectively-binding manner. Metaphor is the privileged example of the fact that language, although it functions completely mechanically, is in no way dependent on secured and fixed "basic elements". Security and certainty within language exist only in the form of intersubjective (and intertextual) redundancy – a basis exposed to an irreducible sliding, which would strike fear into the heart of any mathematician.

The metaphor is a mechanism. It is a borderline case of contextual application, a rule-like violation with rule-like consequences. Its meaning is unfinalizable; but if one takes its structural model seriously, it becomes clear that even the meaning of 'literal' application cannot be finalized other than pragmatically.

The same metaphor that appeared as the impregnable residuum of freedom, subjectivity, and spontaneity within language reveals, if one examines its structure, the fact that on the terrain of language, rule and 'freedom' do not simply confront each other, but that language will rather have to be described as a specific entanglement of mechanicity and 'fuzziness' (misunderstanding). With this 'fuzziness,' however, it will hardly be possible to console those who accepted the rule in order to be able to deny the mechanicity.

12 Agency – On Agency, the Concept of 'Cool,' Certain Impositions of the Male Role, 'Communication,' and the Media [1]

1. Intro

Since media have been converted to interactivity and require more from their recipients than just reception, since Web 2.0, keyword crowdsourcing, has been extracting content from user activities, and since social networks have been demanding that users actively maintain their networks on a daily basis, the question of what *'acting'/'action'* actually means – inside and outside the media – has been up for debate. One of the basic problems in the social sciences, widely and controversially discussed, the concept of action is nevertheless in many respects a mystery for cultural theory. Too deeply embedded in our everyday understanding, it seems to hide in the bright light.

Action is surrounded by a whole bundle of self-evident connotations: 'active' seems better than 'passive'; to be able to act appears to be associated with control, with sovereign mastery of existence and the possibility of realizing one's own desires; passivity with a threat that mixes external determination, social backsliding, images of couch potatoes and obesity. Work/activity lies still at the center of a Protestant ethics that permeates society across religions and denominations and even prompts managers to say that their exorbitant salaries are to be measured by the 12 to16 hours of daily work. Work no longer appears as drudgery, as imposed, but – reinterpreted as the possession of a job – as the basis of social participation, stress as the identity card of those whose work is particularly important and/or self-determined. In leisure sports and active vacations, action subjugates hitherto excluded terrains.

The examples and the excess of the action model are certainly to be put on the account of the western/bourgeois society and the recent neoliberalism. The action model, however, is more deeply rooted, right in the structures of our syntax, which demands that a 'subject' 'governs' 'objects' by means of a verb, and forces everything that is said to be thought according to the action model. The Cartesian subject-object dichotomy, itself a child of the early bourgeois awakening, brings this to a head; and even a theory such as ANT, which claims to challenge the subject-object distinction, pays the price of bearing the 'actor,' and thus action, like a burn mark in its name.

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[1] Translation of the German text: Winkler, Hartmut: Handlungsfähigkeit. Über Agency, das Konzept 'Cool,' bestimmte Zumutungen der männlichen Rolle, ‚Kommunikation' und die Medien. In: Riegraf, Birgit; Spreen, Dierk; Mehlmann, Sabine (eds.): Medien – Körper – Geschlecht. Diskursivierungen von Materialität. Festschrift für Hannelore Bublitz. Bielefeld: Transkript 2012, pp. 107-116, see:
https://www.transcript-verlag.de/978-3-8376-2084-9/medien-koerper-geschlecht/?number=978-3-8376-2084-9;
the German text is available online:
https://homepages.uni-paderborn.de/winkler/Winkler--Handlungsfähigkeit.pdf).

All this is not new as an observation. But cultural theory, I think, should always name the price, the dimension of the subjective crisis that the model of action inevitably brings with it, and sound out where it regularly overtaxes the subjects. And this all the more because the concept of the subject itself is completely indebted to the model of action.

2. From Passive to Active

Computers and the internet are changing the media landscape from 'passive' reception to 'activity' and interactivity. Doubts about this interpretation and about the concept of activity/passivity are certainly appropriate and have also been discussed in the debate about, for example, 'interpassivity.' At the same time, there is no question that the discourse that accompanies the assertion of the computer focuses its rhetoric almost obsessively on the motive of action, with all the aforementioned evaluative connotations. The activation of the user is understood as a hope for participation, as a break with the one-to-many logic of audiovisual mass media, and as wonderfully compatible with the implicit assumptions of progress.

The shift from passive to active, however, does not affect the media alone. It is part of the larger context of the remodeling of society (and of social theory), which is connected with the concept of 'governmentality.' Foucault, in particular, has dealt with action on the most diverse levels; first – following ethnology – by making not only documents, but also *practices* the object of his investigation; second, by not tying practices to intention and consciousness, but, on the contrary, by being interested in their opacity, i.e., in those parts that necessarily escape those who act; above all, however, by showing that power does not aim at immobilization/acquiescence, but at mobilization. Thus, in 'The History of Sexuality,' he countered the repression hypothesis by showing that sexuality is not repressed but rather stimulated even in the times of its strictest regulation. This is the most striking example that it is not a matter of immobilizing subjects, but of activating and mobilizing them. Power and control do not consist in suppressing drive or action. On the contrary, the goal is to use drives as a *motor*, to shape them, and to make them productively useful for the purposes of power.

The concept of governmentality has by no means been fully discussed. At least in one of its dimensions, however, it stands for the thesis that power has its main resource in the activation and mobilization of subjects. Of course, this has always been true for *labor*; and likewise for military 'mobilization,' which, as Virilio and Kittler show, is also a pattern for civil mobilization. And certainly more often than with active resistance, power has been confronted with a stubborn inertia on the part of the powerless, with indolence and tenacious forms of passive persistence.

In modernity, and this makes the thesis historically concrete, this contradiction, the tension between active and passive, increases dramatically. To the extent that social structures are detached from traditions and *mobilized*, there is a need for subjects who are willing to go along with the changes – regardless of whether they agree with them – to *bring them about* through their work, and who are also willing and able to raise themselves, as subjects, to the level of a constantly remodeled world. The tumultuous dynamics associated with modernity come into tension with the persistence of the subjects; their mobilization is supposed to solve the problem; *action* is the mode that carries change as well as self-transformation.

3. Small Capital / Petty Bourgeois

The archetype of the subject capable of acting – this has also been presented many times – is the petty bourgeois. Only where the individual is economically 'independent,' he/she appears capable of acting in a comprehensive sense. Drive (the prospect of profit), willingness to take

risks (the readiness to jeopardize the capital just gained, which everyday language calls *'to risk the existence'*), the possibility to decide on the goals of one's own actions, accountability/ responsibility, and the prospect of personal happiness seem to unite effortlessly in the role of the 'self-employed.'

But 'self-employed' means much more. Above all, the 'self-employed' is the one who is not dependent on others. For the small capitalist this is a complete illusion, in so far as he is actually dependent on his customers, on his suppliers and competitors, on the state and much more. Unlike the wage-earner or the soldier, however, he is at least not subject to orders.

As a *utopia*, 'self-reliance,' understood as independence, has great appeal. It brings the petty bourgeois close to his historical counterpart, the aristocrat, who, above all in 'absolutism,' must answer to God alone; and even the anarchists of the present day quote the concept when they call themselves 'autonomists.'[2]

Fact, illusion or utopia, the ability to act seems to be essentially defined by the breaking of bonds. And thus, the basic axis is named, which I want to pursue further in the following: The more strictly the agent is bound into social, institutional, formal or informal structures, the more he/she has to plan, to think about consequences and to show 'consideration,' the more restricted appears the space in which his action occurs; bonds and conditions injure the concept of action. Ideally, acting is 'free' and that means unconditionally.

4. Cool

The present conditions, however, as Marx, Durkheim, and above all Elias have shown, are different because the social interdependencies increase dramatically. Industrialization and modernity have cast an ever-denser network across the globe, embedding the activities of the individual in ever more contexts and placing them in a field of ever more complex interdependencies. Increasing interdependence, this is Elias's point, makes chains of action longer, the link between cause and effect more and more indirect, and actions less and less noticeable as interventions in a given situation.

However, this does not mean that action and activity lose their importance, that modernity is not still dependent on action and activity. What is required now are forms of compatible and conforming action that are adapted to the structures, that keep the business running and help to constantly rebuild and revise it, that bring about an indeterminate future in order to transform it into an all the more definite present. However, these activities can hardly fulfill an emphatic concept of action. Neither can the individual agents set the goals of their action, nor can they assume responsibility in the true sense of the word, nor can they understand themselves as the cause of action, nor can they enjoy happiness, if it occurs, as its deserved result.

In this contradiction, says Elias, lies a considerable potential for frustration for the subjects involved. Modernity expects them to carry out the conflict on the terrain of their own subjectivity and ultimately at their own expense.

In order to help themselves, the subjects resort to tried and tested means: to double-knowledge structures by insisting that *both* can be true, both the concept of action and the experience that the actual action does not fulfill it. This leads to self-doubt, which makes the contradiction a problem of the private psyche; and finally to the production of semantic substitutes, which creatively bridge the contradiction.

The most striking of such substitutes is perhaps the concept of 'cool'. Cool, probably the most prominent word in the youth language of the last 50 years, clearly stands for a double-

[2] In Germany the term for the Antifa.

knowledge structure: Defined as "enviable, casually cool charisma," it encompasses notions of sovereignty and effortless mastery of existence, the ability to maintain poise even in strange and surprising situations, and the 'cool head' that stands for responsiveness and sober-mindedness.

In essence, however, and this is what makes the matter so piquant, 'cool' probably means *unaffected*. Even if the etymology is not completely clear, it is certain that the word in this connotation stems from African-American subcultures. This would suggest that it – similar to the blues – by no means reflects sovereignty, i.e. the ability to act, but quite the opposite, experiences of suffering and powerlessness. To remain 'cool,' i.e. not to react affectively and to put aside affects even where they would be more than appropriate, is a means of survival when the opponent is overpowering and resistance is futile. Indirectly, 'cool' refers back to the US-American trauma, to slavery.

The concept of 'cool,' unaffected, seems uniquely apt to bring together the contradictory: an aestheticized aristocracy and the renunciation of resistance, emotion, affect; exhibited and visible sovereignty and at the same time a compromise with the circumstances; submission and composure, combined with the refusal to pay the price of psychic deformation.

My thesis is that African Americans leave to whites a semantic artwork that best captures the contradiction between action and inaction. While the pole 'sovereignty' connotes agency, 'cool' also delivers the opposite pole, submission as adaptation to circumstances.

5. Affect

'Cool' makes it clear that action has an affective core; in the impulse that compels and drives action, in the affective (or just low-foam) reaction to circumstances, to resistances that stand in the way of action, in the joyful or anxious expectation, and in the affective response to the eventual results.

But it is precisely affect that seems to be the first victim of the 'modernization' of action. Psychoanalytically trained, Elias also thematizes this aspect by letting – at this point quite disconcerting – a historically not exactly localized archaic 'warrior' exult and mourn, enjoy violence and "the uninhibited satisfaction of pleasure from women […]." In 'modern' action there is no place for such affects. Their faint echo may resound when the equity trader jumps up from the screen, fist clenched as a sign of victory, and managers indulge in metaphors of warfare ('CEO,' 'strategic alliance,' 'how are we positioned?'). Here, however, the wild animal of affect has become domestic, ready to pull the plow as long as there is food. Nietzsche memorializes this when he says that the person of modernity wraps himself in the cloak of reason in order to then go his own way; and of course Nietzsche is concerned with the specific character of this 'reason,' which is essentially committed to the reality principle. And this is exactly what the present demands of the people who act.

6. Gender

The old, emphatic model of action – it is almost superfluous to say this – is male connoted. And its crisis must therefore primarily affect the male role. The ability to act, the 'lonely decision,' the 'own way' – all these are Western clichés, completely inappropriate, outdated, and untimely; even if the corresponding rhetoric still plays a role, for example when it comes to persuading the subjects to persevere assertiveness *within* rather than against the existing hierarchies, or fitness in the field of carefully organized competition.

Even aggressiveness is demanded as a personality trait, as long as it is directed against predefined goals and benefits the apparatus as a source of strength, as a resource. Contemporary hierarchies, interactions, and road traffic are characterized by an extraordinary quota of male perpetrators who are simultaneously frustrated-aggressive and sissies, steaming posers and sheep in wolf's clothing.

What wears down the action model, as has been said, is the interdependence of action contexts. The male role does not prime for interdependence; the network of mutual dependencies must stand in sharp contrast to the role of men. Women seem to be better prepared for this: "Mass culture is a woman"; here, elements of the traditional gender role turn out to be surprisingly functional: orientation towards people and their complex relations, attention to the context, and – this leads back to the field of media studies – orientation towards communication.

When Luhmann rejects the concept of action and makes communication, of all things, the new basis of his sociology, this has, in view of his more than masculine type of theory rather unexpectedly, a hidden gender aspect. Communication appears as an alternative because it necessarily and always already assumes a relation and seems to be more appropriate to the networks of modernity than the concept of action tied to a 'solitary' subject. The 'solitary agent' makes no sense in the field of comprehensive communications.

7. Subject Criticism

French philosophy, which in the seventies caused a shock wave in Germany, did not so much dismantle the philosophical concept of the subject, as draw philosophical consequences from its empirical crisis. At the center, however, is a radical critique of language and signs, and not, as one might expect, a critique of the model of action.

If the subject is bound to the model of action, however – as a grammatical subject in the architecture of syntax, in the aesthetics of genius as 'author,' and as substitute for the creator-god, in economics as subject of labor, and in the philosophies of the subject as the only certain center, subject of reflection, reason, and cognition, from which action proceeds as a purposeful change of the world – then an equally radical critique of practices would have to be placed alongside the radical critique of signs. Foucault's attention to practices envisages this.

In the Dialectic of Enlightenment, Adorno/Horkheimer have, among other things, provided a critique of the male perpetrator. For the commandment 'to become practical,' to act, they have nothing but scorn, and they demonstrate that the initiative, which the individual still ascribes to himself, has long passed to the social apparatuses. Interestingly, however, they once again oppose this with a subject that then necessarily no longer determines itself through action and practice, but through its ability to differentiate itself from what exists. When Adorno formulates this in Aesthetic Theory, he splits the concept of action: Practices and aesthetic practices diverge, and only the latter have the power to distance themselves and to cause change.

8. Restaging

The media, it seems, have opted for a different solution on the terrain of aesthetics. They invest equally on both sides and work resolutely toward double-knowledge. In the afternoon TV series – from Al Bundy to Home Improvement – the dismantling of the male patriarch is uncompromisingly pursued; episode after episode it is exposed that all that remains of the ability to act is a set of gestures, a kind of performance. "What happened to the strong, silent type?" the script has Anthony Soprano ask, implying that silence means action and speech weakness, the renunciation of action.

In other genres we find different solutions: Discovery Channel, for example, still shows real men snatching king crabs from the Arctic and timber from the forest. Wherever there is *"action,"* the old model of sovereignty is adored.

And likewise – modified – in the casting shows. Here, the order is given to act on one's own, with heroic determination, against all odds and without regard for the context, for previous experience or ability, alliances or networks; and without regard for the statistics, the scant actual chance. In the fire of pure action all contradictions melt away: individuum and group feeling, cooperation (duet!) and bitter-serious competition, coaching and evaluation/condemnation, the loving, nurturing and the cruel-strict father. And faithfully all (all!) candidates promise to *'give everything*.' Whoever gives everything has left measure, exchange, and equivalence behind and enters a Bataillean universe of unconditional exertion.

Unconditionality, however, as has been said above, is a utopia. The utopia of stepping out of the interdependencies once again and taking one's fate into one's own hands.

And exactly here emotion is injected again. After long years of socialization under the dictates of affect control, which, as Reich shows us, results in the formation of a body armor, the subjects are now required to show their feelings, and to do so as much and as 'authentically' as possible. The show value of the event lies in the fact that the clash becomes physically discernable: If white-collar bodies suddenly have to deliver 'soul,' the audience *knows* that this must fail. Double knowledge, I think, is almost openly conceded here. Action is the starting point; that decision and action fail is heard as the second part of the message.

'Action' has become an ideology. Starry-eyed, wrapped in a package of self-evidence, it appears almost unquestionably as a value. But if action were what it purports to be, no one would need to be persuaded.

13 Short Chains of Action

Action and Subject Constitution in Computer Games [1]

1. Intro

The point, computer gamers report, and the main reason for their desire to play, is the possibility to *act* for themselves. This is considered the biggest difference to other media experiences. While film and television put the viewer in a "passive" role, computer games, the argument goes, require the player to be more active. Here, you can *do something yourself.*

But what does this mean exactly? If gamers focus so resolutely on *action,* it seems sensible to ask about the background and, independent of individual computer games and game experiences, to consider the concept of action itself. Most current approaches in game studies would discuss the action concept – to put it succinctly – in terms of 'interactivity'; certainly an iridescent term, and worse: a term that systematically obstructs access to certain questions. For one, interactivity bypasses the question of action in a peculiar way by directing the focus to an in-between: Action takes place between players, between the rules of the game and the player, or between player and narration. Second, the model of interactivity unquestionably presupposes subjects as actors/agents; becoming the basis for their interactions with the game mechanics, a narrative, the available roles, the psychological gratifications, and so on. And third, interactivity is characterized as an essentially positive and satisfying experience that appears timeless and does not seem to be anchored in a historical or ideological context.

So what does it mean for a *self* to 'do something'? And why is this active role associated with pleasure? Is an intact, self-empowered self always implicated in our notion of action?

Possible answers to these questions will be developed here by questioning the action concept itself. The first section will look at some texts on the concept of agency in game studies. Then we will problematize agency in general, in order to subsequently determine its function in computer games. Finally, we will propose an alternative to the concept of interactivity.

2. *Elephants in the Room:* Action and Subject in Game Studies

Although interactivity is often postulated as a special property of computer games, there are hardly any general reflections on the concept of action or subject formation in game studies.

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[1] Translation of a German text that I wrote in cooperation with Ralf Adelmann: Adelmann, Ralf; Winkler, Hartmut: Kurze Ketten. Handeln und Subjektkonstitution in Computerspielen. In: Ästhetik und Kommunikation, no. 148, 2010, pp. 99-107. The text is available online:
https://homepages.uni-paderborn.de/winkler/Winkler--Adelmann--Kurze-Ketten.pdf.

The *Handbook of Computer Game Studies*,[2] for example, does not discuss these terms, merely the genre designation "action games" appears in the index. Not so in the case of interactivity: Here one will find many entries in the index and some articles in the book. For example, interactivity is used to explain immersion effects of computer games and the involvement of the player in a narrative[3] or, depending on the type of interactivity, it is used to devise a system of genre designations for computer games.[4]

In this use of the term, interactivity always refers to something else. One almost gets the impression that game studies avoids thinking about 'action.' Are action and subject the *elephants in the room?* The thing no one wants to see?

Interactivity, on the other hand, is becoming the central concept of the computer game: "'Interactivity' isn't just about giving players choices; it pretty much completely defines the game medium."[5] And Salen/Zimmerman[6] spell out this definition in several steps: As action between the player and the game, which is primarily about emotional and intellectual participation; as action between the player and the user interface, in which functional aspects such as the gamepad and the game buttons are addressed; and as action between the player and game elements, i.e. the decision-making possibilities and the forms of their presentation. Finally, another, last form of interaction takes place between players, for example, when they form fan cultures.

Quite contrary to considerations like this, we think that computer games *negate*, however illusory, the many mediating instances. Computer games *obliterate* the postponement, the in-between. Cause and effect are coupled directly; and by linking action straight to consequence, the in-between, the inter-active is virtually eliminated. If computer game theories often focus on narration and play, this too would have to be relativized, because action and subject constitution hardly play a role there either.

The elephants in the room of game studies, however, cast shadows; because the difficulty of the interactivity concept to explain the action dimension becomes quite evident in some theoretical approaches.

In his book *Half-real*,[7] Jesper Juul drafts the following definition of the computer game: The first point is unsurprising: "Rules". But subsequent points are interesting for our concern: with "4. Player Effort" and "5. Player Attached to Outcome", Juul tries to approach the phenomenon of agency and empowerment. Unfortunately, however, he restricts himself to the common perspective of psychology: "The emotional attachment of the player to the outcome is a psychological feature of the game activity."[8]

Agency or "effectance" approaches, such as those taken up by Christoph Klimmt, pursue a similar line of reasoning:

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[2] Raessens, Joost; Goldstein, Jeffrey H. (eds.): Handbook of Computer Game Studies. Cambridge, Mass.: MIT Press: 2005.

[3] Raynauld, Isabelle: Click Reading: Screenwriting and Screen-Reading Practices in Film and Multimedia Fictions. In: Raessens/Goldstein, op. cit., pp. 81-95, here: p. 85f.

[4] Wolf, Mark J. P.: Genre and the Video Game. In: Raessens/Goldstein, op. cit., pp. 193-204.

[5] Salen, Katie; Zimmerman, Eric: Game Design and Meaningful Play. In: Raessens/Goldstein, op. cit., pp. 59-79, here p. 70; Salen/Zimmermann cite Walter Specter.

[6] Ibid., pp. 70f.

[7] Juul, Jesper: Half-Real: Video Games Between Real Rules and Fictional Worlds. Cambridge, Mass.: MIT Press 2005.

[8] Ibid, p. 40.

> "Computer games respond directly and immediately to user input. Every (permissible) input is followed by a reaction of the game program, be it an explosion, a stock purchase, or a shot at a soccer goal."[9]

When he further writes that the close coupling of action and consequence "trigger[s] the immediate experience of one's own causal efficacy [= pleasure],"[10] this comes quite close to our perspective.

In other approaches, emotions and motives are linked to cognitive functions, and we end up back at the debate on violence and addiction, which – it seems – almost every theorization of computer games has to engage with. But why do the explanations stay at the level of the individual and the psyche? They neglect to address action also from the perspective of cultural, social, and historical explanatory models. This fixation on the individual remains incomprehensible when one considers that game theories also play a significant role in the social sciences.

If gameplay is understood solely as individual experience, or as 'rules in action,' then the collective dimension, actions as historical and socio-cultural manifestations, is lost from view.

> "A game's gameplay is the degree and nature of the interactivity that the game includes, i.e., how the player is able to interact with the game-world and how that game-world reacts to the choice the player makes."[11]

Again, it's all about interactivity; agency is once again out of the picture.

3. Agency

If we return to the popular distinction between the 'active' computer game and 'passive' media such as film and television, it is initially striking that the division into active and passive is accompanied by manifold evaluative connotations. And as a matter of course, an active position seems superior to the passive one. This is true on the level of language, in grammar, where the subject 'rules' the object by means of the verb, and more generally, insofar as agency is most closely associated with hierarchical notions, notions of power, the possibility of asserting goals and realizing one's own desires. Agency/power is initially directed at objects and at nature; phylogenetically, it finds a stable basis in the struggle for the survival of the species.

In addition, however – and here the matter becomes more serious – agency/power is also directed at other people. The experience of being forced out of the role of subject and finding oneself in the role of *object,* of becoming the object of someone else's wishes, goals, assaults, or exercise of power is traumatic; and at the same time it is part of everyday life; in every office it determines, however moderately, the interaction with the boss. Moreover, at least ontogenetically, one's own path by no means begins in the position of subject; the experience of oscillating between subject and object roles will continue throughout life. Active and passive correlate with gender stereotypes; at the same time, sexual experiences in particular seem suitable for switching between both roles pleasurably, and for enjoying passivity as well as activity.

The separation into active and passive, subject and object is certainly very fundamental in human history. Not in all cultures, however, do active and passive, subject and object diverge as sharply polarized as they do in the Western understanding of the world and of the self. The

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[9] Klimmt, Christoph: Unterhaltungserleben beim Computerspielen. In: Mitgutsch, Konstantin; Rosenstingl, Herbert (eds.): Faszination Computerspielen: Theorie – Kultur – Erleben. Vienna: Braumüller 2008, pp. 7-17, here p. 8 (transl. W./A.).

[10] Ibid. (transl. and add. W./A.).

[11] Juul, Half-Real, op. cit. p. 87; Juul cites Rouse.

concept of the subject is – in contrast to the grammatical category – historically more recent. With a prehistory in antiquity and in the figure of the ancient hero, which Horkheimer/Adorno reconstruct in the *Dialectic of Enlightenment*, the subject is an achievement of the bourgeois revolution.

Only the bourgeoisie imposes the burden of action on the individual. Metaphysics recedes as a basis and an abutment and relates the bourgeois subject back to itself: Supported solely by the ideal of reason and the reality of his proper interest, the individual must now assume sole responsibility for the goals of action, criteria of action, and possible culpability.

In the ideal of sovereignty, the bourgeoisie – curiously – orients itself towards its historical opponent, the nobility, the sovereign. On the side of the creative, in the sovereign production of the new, towards the creator God.

In the bourgeois model of action, however, various other lines intersect: The economic basis is the coupling of science and industry, which permits mastery of nature on an unprecedented scale, which renders nature docile as an *object* and leaves behind any other relationship to nature as a romantic remnant. Capital ownership, economic independence is the self-evident basis for being able to act as a bourgeois subject. The bourgeoisie adopts its ethos of work from the monastery and Protestantism; work becomes the dominant form in which action and agency are thought and codified. On the ideological surface, rhetorics of 'freedom' (freedom of action) and individuality, of individualism, become dominant; on the political level, a web develops that combines – quite emancipatively – models of equilibrium (market as a reconciliation of conflicting interests) with a reservation against direct, frontal exercise of domination; domination is shifted inward, to self-mastery. The structure aims to avoid direct encroachment by other agents (and the slide into the role of the object). The Western model of democracy has its focus here.

In the course of the bourgeois era, this bourgeois model of subject and action was confronted politically and practically with deviating facts, above all with the fact that the majority of the population works but does not at all experience itself as acting sovereignly when separated from capital ownership. The rhetoric of self-responsibility/ability to act/agency reaches a limit here.

And in parallel, the concept was subjected to a fundamental critique in the realm of philosophy, ranging from Nietzsche to the French 'subject-critical' philosophies of the sixties. At least in philosophy, no one now advocates it without reservation.

This does not mean, however, that it is not effective and powerful in practice. Our hypothesis is rather that the bourgeois subject of action – and be it as an undead, as a revenant – is celebrating a joyous resurrection, including in the unsuspected sphere of the *game* and especially the computer game.

4. Play, Pleasure, 'Para-Action'

In modern societies, there is a gap between the constant challenge to be a subject or to act as such, and the possibilities to experience oneself as an acting subject. The type of individualized action that has an open outcome is lost in the routines and assurances of society; existential risks and uncertainty, on the other hand, are less and less related to individual actions.

The computer game offers uncertainties in the outcomes of action as rationally justifiable options and opens up room for maneuver. In the game, on the one hand, action is constantly demanded without, on the other hand, being linked to the established scales of economic utility. Accordingly, actions take place in the 'useless' time, the leisure time.

The bourgeois subject appears in the computer game as a revenant, not in its original form and function. In this media context of popular culture, the subject will only be able to unfold its productivity in the sphere of game worlds. The effects of this subjectivation, however, can then certainly fulfill social functions...

In addition, the production of the subject in the computer game is directly linked to pleasure, passion, and dedication. Game theory points to a direct link between need and pleasure, which can only be explained by the alleged social non-functionality and unproductivity of the game.[12]

The fact that games are 'unproductive' is paradoxically part of their productivity as a subject generator. By acting, the player draws the line between the game and a social reality that suggests freedom of action, but ultimately cannot guarantee it. The modern critique of the subject can therefore, for the time being, retain plausibility in relation to the core social sphere, while in the – rather marginal – game culture subjects continue to happily reproduce themselves through action.

While in modernity the individual is in tension with society resulting in conflicts,[13] in the computer game individual action is perceived as pleasurable precisely where it leaves the system of social restrictions behind; and it makes little difference whether action means the unerring shooting of aliens or the skillful stacking of falling rectangles.

In the computer game, the scope of action expands. At its periphery, a special space emerges which becomes controllable by the player's '*para-actions*.' There are well-known theories about 'parasocial interaction' in mass media; derived from these, but distinct from them, we propose the term 'para-action' in order to describe all actions in computer games that imply and produce an acting subject.

In parasocial interactions, the conversant mechanisms of communication are simulated. In the canonical text on the subject by Horton/Wohl,[14] the game show host on television is ascribed the function of communicatively involving the viewers in the events and thus maintaining the illusion of a face-to-face relationship. The decisive factor here is the viewer's willingness to actively support this illusion. In this sense, one could speak much more of interactivity with television than with the computer. Viewers must actively decide whether or not to accept the role offered by the game show host in the illusionary communication process. Likewise, they can avoid the televisual offers of intimacy, participation, and interaction without any consequences for themselves.

The fact that they lack any direct consequences in social reality connects parasocial interaction in television with para-action in computer games. In contrast to parasocial interaction, para-action does not center on communication, but on actions or the 'real' pleasure of directly coupled action/reaction. Para-actions, therefore, do not necessarily have to be interactive. They virtually suggest that mediating communication does not intervene. After all, their point is precisely that they create direct cause-effect relationships.

In computer games, acquired skills are tested on the game's objects and are continually perfected. In first-person shooters, for example, para-actions such as shooting and not being hit improve the available weapons and shields – and thus options for continuing action. The 'weapon' is therefore not a weapon, as folk pedagogy would have us believe, but the accumulation, opening, and enabling of further para-actions. It is an agency power-up, a further en-

[12] Huizinga, Johan: Homo Ludens. A Study of the Play-Element in Culture [1944]. London. Routledge 1980, pp. 8ff.

[13] ... one of the main subject areas of sociology ...

[14] Horton, Donald; Wohl, R. Richard: Mass Communication and Para-Social Interaction. In: Psychiatry, no. 19, 1956, pp. 215-229.

hancement of the ability to act, such as an accelerator in a racing game or a new item in a simulation or role-playing game.

If one understands the space of possibility of the computer game as a space for action in which the available para-actions are evaluated according to their individual level of pleasure and enjoyment, then its social function becomes evident: The computer game provides relief from the real conflict between the ideal of the bourgeois action model and its actual social restrictions.[15]

5. Short Chains of Action, Violence

What has been said also offers a new perspective on the more than tiresome question of violence. It is undeniable that fictional violence plays a prominent role, at least in shooters and role-playing games, and it is equally undeniable that the well-meaning scare tactics of educators and politicians fall short of the mark. Violence is first of all found at the level of content, action patterns, and iconographies. If we look for the essential difference between the game and the feature film, for example, which has drastic scenes of violence too, we find that the special feature of the game lies in the fact that the player leaves the role of the eyewitness and switches to the role of the actor, not to say the perpetrator. We believe that what is at stake here is the issue of subject position. And further, that this issue is more dominant and significant than the visual surface and the pixels of splattered blood. We would like to argue that the violence in computer games, despite all appearances, is only a mode of *representation*; and for a structural context that lies beneath this surface and that has only a very mediated connection with violence in 'reality.'

A key is provided by Norbert Elias in his famous, not uncontroversial theory of civilization,[16] which describes human history in a large-scale trajectory as a process of increasing civilization. Elias sees this process of civilization, and especially the historical transition to modernity, as characterized by a profound ambivalence: For on the one hand, civilization means that the social space is pacified, and immediate physical violence is pushed back from everyday life. The taboo on violence – or the monopolization of violence by the state – is a great achievement; civilized people have learned to pursue their interests and resolve conflicts without resorting to the means of physical violence.

At the same time, however, this means – Elias leaves no doubt about this – that a tremendous *burden* is imposed on the subjects. The taboo on violence demands a high degree of self-control, precisely because violence is so obvious as a means of enforcement. The whole human psychological structure is designed to react to demanding situations with great emotion, quickly and spontaneously; it is precisely this mode of reaction that must be *blocked* in order to make civilization possible. According to Elias, civilization consists in a "social constraint towards self-constraint."[17] An elaborate socialization process, social institutions, and regulatory apparatuses work together to build a *system of inhibitions.* This is *ingrained* in the subjects, i.e. so deeply anchored in the psychological structure that the subject is hardly able to transcend them delib-

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[15] Against this background – and this would most closely parallel our argument – ludological computer game theories consider players as designers of action spaces rather than interpreters of a text (cf.: Eskelinen, Markku: Towards computer game studies. In: Wardrip-Fruin, Noah; Harrigan, Pat (eds.): First Person. New Media as Story, Performance, and Game. Cambridge, (Mass.)/London: MIT Press 2004, pp. 36-44, here: p. 38f.).

[16] Elias, Norbert: The Civilizing Process. Sociogenetic and Psychogenetic Investigations [1939]. Malden, Mass.: Blackwell 2003, see esp.: pp. 363-448. Elias' theses, as said, have not remained without objection: The most pointed counter position has been formulated by Hans Peter Dürr (D., H. P.: Obszönität und Gewalt. Der Mythos vom Zivilisationsprozess. Vol. 3., Frankfurt am Main: Suhrkamp 1993).

[17] Elias, op. cit., p. 365.

erately. External compulsion – here Elias meets Foucault's 'disciplines' – is transformed into a system of internal compulsion. The price, however, is that the friction, the conflict, which would otherwise be an external one, is also shifted into the interior of the subject; the subjects live their whole life in the conflict between their inner impulses and the imposed system of inhibitions, which is now also part of their interior.[18]

The idea thus outlined is interesting not because of its reference to manifest violence. Rather, Elias takes it further by explaining what actually distinguishes the called-for 'civilized' reactions from the former, less civilized ones. And his central idea is that with the process of civilization and modernity, *the chains of action lengthen in significant ways.* In this way, Elias takes up precisely the more general question of action and agency that is the subject here. Modernity, Elias says, is characterized above all by the fact that the social apparatus becomes more complex.

> "[The more differentiated society becomes], the larger grows the number of functions and thus of people on whom the individual constantly depends in all his actions, from the simplest and most commonplace to the more complex and uncommon. As more and more people must attune their conduct to that of others, the web of actions must be organized more and more strictly and accurately, if each individual action is to fulfil its social function. Individuals are compelled to regulate their conduct in an increasingly differentiated, more even and more stable manner."[19]

Social complexity thus turns into a compulsion for coordination; and this into the demand for individuals to discipline their own behavior. The individual is socially acceptable only to the extent that he/she is stable, continuous, and *predictable*; this requirement must enter into a painful tension with the spontaneous unpredictability of inner impulses.

Secondly, it is important that the space changes within which the individual acts and pursues his/her goals. The more complicated the social apparatus becomes, the more instances are involved in each individual process. If the sensation of hunger is aimed at food and satiety, modernity interposes between hunger and food years of education, an employment contract, wage labor, and a supermarket; the path to sex leads through deodorant, a discotheque, a period of considerate waiting, countless phone calls, and possibly a flower shop. In both cases, a pleasurable shortening of the path virtually imposes itself.

In modernity, Elias says, *long chains of action* have taken the place of short ones. Long chains of action, however, mean *postponement,* that is, if satisfaction becomes foreseeable at all. Moreover, the transition from short to long chains means a process of abstraction in which certain qualities of experience fall by the wayside:

> "Life becomes in a sense less dangerous, but also less emotional or pleasurable, at least as far as the direct release of pleasure is concerned."[20]
> "[T]he other forms of compulsion which now prevail in the pacified spaces pattern the individual's conduct and affect impulses in the same direction. The denser the web of interdependence becomes into which the individual is enmeshed with the advancing division of functions, [...] the more strongly is each individual constrained from an early age to take account of the effects of his or her own or other people's actions on a whole series of links in the social chain. The moderation of spontaneous emotions, the tempering of affects, the extension of mental space beyond the moment into the past and future,

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[18] "Part of the tensions and passions that were earlier directly released in the struggle of man and man, must now be worked out within the human being." (Ibid., p. 375).

[19] Ibid., p. 367f. (add. W./A.).

[20] Ibid., p. 375.

> the habit of connecting events in terms of chains of cause and effect – all these are different aspects of the same change of conduct."[21]

The emotion of civilized people is thus curbed. Elias confronts them – without much historical specificity – with chivalry and nobility:

> *"The life of the warriors [...] is threatened continually and directly by acts of physical violence; thus, measured against life in more pacified zones, it oscillates between extremes. Compared with this other society, it permits the warrior extraordinary freedom in living out his feelings and passions, it allows savage joys, the uninhibited satisfaction of pleasure from women, or of hatred in destroying and tormenting anything hostile or belonging to an enemy."*[22]

Historically disputable and certainly not unproblematic in its male-identified perspective, the passage is nevertheless illustrative. Long chains of action have a genuine potential for frustration. Short chains of action, one might conclude, stand in contrast to this; the direct, clear coupling of cause and effect, action and consequence, deed and impact takes on a utopian quality in contemporary society.

And the shortest conceivable chains of action, and here we come full circle, offer destruction and violence. If the neighbor is too loud – one gun shot from the balcony and there is silence, actually-factually, irrevocably and without delay, immediately. If something is in my way, I blow it away. These examples show that society has good reasons for blocking such solutions; but also, that below the taboo the impulse is certainly still active.

Our thesis is that in the midst of modernity, computer games – realizing the utopia – once again open up the drama of short chains of action. Transferred into the sphere of symbolic trial action,[23] separated from actual consequences – this is the definition of games – they allow the subjects to establish themselves as effective, as capable of action. To us, this seems to be the privilege of the first-person shooter; cause – effect; bang and gone; the fact that there are still points awarded for this becomes nothing more than a sanctioning: no postponement, pleasurable short chains, taboo undermined, but still okay.

In this interpretation, and this is striking, violence would not be violence. It would be nothing but a *mode of representation,* a privileged opportunity to create short chains of action and to exploit the potential for pleasure that these offer in the midst of a frustrating world of long chains. The symbolic refraction, the playful character of the game, thus takes center stage.

Elias' theory can be read as an indication that in modernity the model of agency itself is undergoing a profound crisis. If the long chains are confusing and frustrating, but at the same time subjects are forced to play the role of subject, bearer of agency at least as far as the hamster wheel of society requires, this split pervades the agent, who as agent is least able to tolerate the split.[24] *The need for compensation* arises in the wake of frustration. And more realistic than the fear that violence could spill over from the symbolic into the actual would be the fear that computer gamers are not satisfied with pure compensation or with *patches* in the long run.

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[21] Ibid., p. 370.

[22] Ibid., p. 370f. (emph. W./A.).

[23] In German: "Probehandeln;" the term is taken from Freud, who speaks of thinking as "an experimental kind of acting" (F., Sigmund: Formulations on the Two Principles of Mental Functioning [1911]. In: The Standard Edition of the Complete Psychological Works of Sigmund Freud. London: Hogarth 1958, pp. 215-226, here: p. 221).

[24] "Humanity had to inflict terrible injuries on itself before the self – the identical, purpose-directed, masculine character of human beings – was created, and something of this process is repeated in every childhood. The effort to hold itself together attends the ego at all its stages". (Horkheimer, Max; Adorno, Theodor W.: Dialectic of Enlightenment. Philosophical Fragments [1947]. Stanford, Cal.: Stanford UP 2002, p. 26).

6. Conclusion

The thesis can be summarized in three points: 1. When talking about interactivity, it is usually assumed that only the 'inter-' needs explanation; activity and action, on the other hand, are assumed to be part of everyday experience. This apparent certainty, however, does not stand up to scrutiny from a cultural studies perspective. If agency/activity is at the center of bourgeois self-understanding, it becomes clear that this is not a general anthropological question, but a historical one with a precise time horizon. The focus shifts to the concept of the *subject,* which may be a given in grammar, but which in the actuality of everyday life – like a Tamagotchi – needs daily care, stabilization, and reinforcement.

2. Cultural theory tells us, secondly, that the subject is in a profound crisis. And this not on the lofty heights of subject-critical philosophy, but likewise in everyday experience, where neo-liberalism preaches that each individual has his fate in his own hands, but where traffic rules and SSN, awkward EU-regulations on the import of caramel sweets, employer and landlord clearly deny this. The action model of the computer game enters into this contradiction as a *patch.*

3. In this respect, the *pleasure* that the game provides is a *re-enactment.* A late reverberation of that male model of action, which – *mass culture is a woman*[25] – is so inadequate to the present that Elias transports it to a mythical time of "the warrior." In the computer game, we are allowed to swing the mace once again. There, the chains of action are shortened in a pleasurable way. Cause – effect. Bang and gone. Outside the game, long chains and mediation reign.

It is this mediation that implodes in the computer game. The fact that media – in general – are the *epitome of mediation* accounts for the special tension of this media constellation.

[25] Huyssen, Andreas: Mass Culture as Woman. Modernism's Other. In: H., A.: After the Great Divide. Modernism, Mass Culture, Postmodernism. Bloomington, Indianapolis: Indiana UP 1986, pp. 44-62.

14 Traditional Visual Media and the Computer

1. Problems in the Conception of Media History

> "In a radical break with optical representation, a different mode of presentment appears with the information machines. Its novelty is not yet clear, because it is difficult to understand the difference between the synthetic image and other automatic images."[2]

One of the fundamental questions about the data universe is how it connects to the established media. Ever since the computer has been recognized as a medium, there has been a fierce debate about criteria and categories, and completely different theses have been put forward as to how the computer should be classified in media history.

And again and again, the focus is on differentiating it from technical images. 150 years of photography, film, and television make media and visuality appear almost synonymous; so does the new medium really mean a 'radical break with optical representation'? Or does the computer not also produce images, synthetic images, which would at least limit the difference that needs to be understood?[3] And did photography and television not already provide 'grainy,' in a sense digital representations?[4] Or is it only the technical images that stand for representation and reference at all, while the new medium has to be thought of in completely new categories?[5]

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[1] Translation from the German book: Winkler, Hartmut: Docuverse – Zur Medientheorie der Computer. München: Boer 1997, chapter 5: Bildmedien und Computer (pp. 185-222); the German text is available online: https://homepages.uni-paderborn.de/winkler/Winkler--Docuverse.pdf.
First draft translation.

[2] Couchot, Edmond: Die Spiele des Realen und des Virtuellen. In: Rötzer, Florian (ed.): Digitaler Schein. Ästhetik der elektronischen Medien. Frankfurt a. M.: Suhrkamp 1991, p. 347 (transl. H. W.).

[3] This reference is captured in the overarching concept of 'screen media;' it is also advocated by many authors who write specifically about digital images.

[4] This is Flusser's view, for example; see Fl., Vilém: Towards a Philosophy of Photography [1983]. London: Reaktion 2012, pp. 31f.; or Id.: Into the Universe of Technical Images [1985]. Minneapolis/London: Univ. of M. Press 2011, pp. 15ff.

[5] From an infinite number of examples: Hagen, Wolfgang: Die verlorene Schrift. Skizzen zu einer Theorie der Computer. In: Kittler, Friedrich A.; Tholen, Georg Christoph (eds.): Arsenale der Seele. Literatur und Medienanalyse seit 1870. München: Fink 1989, pp. 220, 224, 226; Bolz, Norbert: Computer als Medium – Einleitung. In: B., N.; Kittler, Friedrich; Tholen, Christoph (eds.): Computer als Medium. München: Fink 1994, p. 10; Nake, Frieder: Künstliche Kunst. In der Welt der Berechenbarkeit. In: Kunstforum, No. 98, Ästhetik des Immateriellen, part II, Jan./Feb. 1989, p. 86.

The confusion was exacerbated by the enormous hype surrounding computer art in the 1980s. Large annual forums such as the 'Ars Electronica,' each documented in detail on television, and a wave of journalistic and scientific publications on the subject gave the impression that, after a prehistory of non-sensuous data and abstract algorithms, digital media had now also reached the stage of sensuous perception. This was the second attempt after the computer art of the sixties. Supported by superior hardware, it seemed possible to cope with the exorbitant data quantities of graphic data processing and to actually compete with the high resolution of photographic images. Film and television converted their post-production to digital techniques and in the aesthetics of advertising spots, synthetic and real images merged into an indistinguishable amalgam.

Image databases have been built up in the international data network since around 1993. Many users have acquired highly equipped multi-media machines on which graphics-capable browsers can also process moving images,[6] even very simple webpages are richly illustrated and the quantities of data transmitted are one of the reasons that have brought the network to the brink of collapse.[7] Accordingly, there is intense discussion on the expansion of capacities; and interactive television and video on demand appear to be the goals towards which the development of the data highway is heading.

All appearances suggest that the digital media have moved in the direction of the visual. But what if, in this case, appearances are deceptive? What if it is a transitory phase, a historical compromise offered by computers to a public accustomed to visuality? With the prospect of derisively revoking the compromise as soon as the shift in the balance of power allows it? In this perspective, the visual surface would be a kind of shield, behind which the actually relevant changes take place.

And this, in fact, is the thesis that will be defended in the following. I assume that a media upheaval – away from technical images and towards the universe of computers as a completely different, abstract and structure-oriented media constellation – is indeed currently taking place. A decisive crisis of technical images thus seems to have arrived[8] and a profound epochal turning point in the history of media. A new game seems to have been opened up and a new, fascinating world has begun.

The thesis, as I said, will be developed step by step. First, however, a methodological consideration makes sense. The thesis outlined above depends primarily on the way in which media history as a whole is conceived. There is a fundamental difference between McLuhan's distinction of television and computers from writing and Kittler's view of the epochal break in the transition from language to a 'recording of the real';[9] and there is also a difference between the view that the predominance of the eye reaches its climax in writing and ends in the 'tactile' medium of television,[10] and Flusser's view that two-dimensional images and linear writing lead to zero-dimensional algorithms.[11]

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[6] (Note on translation:) The text dates from 1997, when the multimedia age was just beginning.

[7] See for example: Datenmüll verstopft Computernetzwerk. In: Frankfurter Rundschau, 03/30/95, p. 34; Wolf, Gary: The (Second Phase of the) Revolution Has Begun. In: Wired, No. 2.10, October 1994.

[8] I have developed this thesis in: W., H.: Das Ende der Bilder? Das Leitmedium Fernsehen zeigt deutliche Symptome der Ermüdung. In: Hickethier, Knut; Schneider, Irmela (eds.): Fernsehtheorien. Dokumentation der GFF-Tagung 1990. Berlin: Sigma 1992, pp. 228-235; und: W., H.: Tearful Reunion auf dem Terrain der Kunst? Der Film und die digitalen Bilder. In: Paech, Joachim (ed.): Film, Fernsehen, Video und die Künste. Strategien der Intermedialität. Stuttgart/Weimar: Metzler 1994, pp. 297-307.

[9] Kittler, Friedrich A.: Discourse Networks 1800 – 1900 [1985]. Stanford (Cal.): Stanford UP 1990.

[10] McLuhan famously put forward this thesis.

[11] Flusser, Into the Universe of Technical Images, op. cit., pp. 6ff.

And there is an even more general problem behind all these concepts: is it even possible to assume that different media replace each other in the course of media history? That television takes the place of the Gutenberg galaxy and that each new medium supersedes another, previously powerful medium? Or do the new media merely add to the existing ones, so that it would make more sense to describe media history as a process of successive accumulation?

This is a very fundamental difference in perspective, which has far-reaching consequences for modelling media history. The concept of cumulation initially provides the more peaceful picture. Here, media history is seen as a constant enrichment and differentiation; for example, it is argued that even the age of technical media has not been able to eradicate books, indeed, on the contrary, their number is constantly increasing; nor is the existing media landscape irritated when the computer enters the stage, new systems primarily bring new possibilities with them and it is important to use their respective specifics in the best possible way.

The thesis of replacement (substitution), on the other hand, is based on the observation that at least historical media upheavals have actually displaced, disempowered and marginalized formerly powerful media. And it is often implied that media history can be described as a chain of 'leading media' which replace each other. 'Oral societies' are replaced by writing, writing by technical images and these are now replaced by computers.

However, the concept of a leading medium raises problems. How exactly should the term be defined? Is it already the invention of writing that triggers the upheaval, or is it central that a caste of scribes establishes itself and gains influence on the social process? Or does the generalization of literacy replace the oral tradition? Quantitative and qualitative criteria seem hopelessly entangled. In addition, talk of a leading medium all too easily obscures the fact that it is fundamentally *media constellations*, an ensemble of different interwoven media, that determine a media-historical situation. But how should a leading medium and some 'complementary media' be considered together? Is a model of compensation, of mutual equalization of deficits, valid, or is it more promising, instead of assuming a pre-stabilized harmony, to emphasize precisely the temporary distortions and the abrupt changes of direction in media development?

Even if all these problems are largely unsolved, it can be said that the 'substitution' thesis is evidently the more interesting concept. Media history only becomes a dramatic process when it becomes clear that new developments actually damage the existing constellations; the fact that our lifespan and the time available for media consumption are limited, that the different media compete for our lifetime, attention, and the function of exploring the world, that even with an expansion to 500 television channels, the hours of media use will not increase significantly, and that ultimately there is no other time available for computer usage than that previously spent in front of the television[12] – such considerations alone make it clear that the competition between the media is about something.

And the theoretical questions are shifting. Because now the reason why certain media changes occur becomes relevant. And again, various hypotheses are possible: It is conceivable that shifts in the structure of needs have occurred and that the new medium better serves changed social requirements. It is also conceivable that previously unnoticed deficits of the previous media create the space into which the new medium enters; that media are exposed to a kind of 'fatigue' in the course of their history or that certain hopes on the part of the recipients are exhausted. The argument thus returns to the terrain of those 'wish constellations' that are the subject of this book.

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[12] This applies to private use; in addition, of course, the computer is the first mass medium after writing that also plays a role in everyday working life. In September '95, Forbes magazine ran the headline: "Toss out your TV, fire your secretary. The cyberspace revolution is getting serious." (Forbes, September 11, 1995).

If a media shift from technical images to computers is currently taking place, and if people – this was the question in the introduction – are investing money, time, energy, hope and curiosity in the new medium, then the real puzzle seems to be why all this is happening, when the new medium is obviously so little sensuous, so little entertaining, so little accessible without preconditions and so little immediately satisfying, indeed, on the contrary, it offers considerable frustration and experiences of personal failure right up to relatively high levels of competence. If one follows the criteria that have been used to explain the triumph of technical images, it seems impossible that such a medium could be successful. So, either these criteria are inapplicable to the new medium (and this is fundamentally different from the previous ones) or they have missed essential features of the old media constellation too.

A double search movement therefore seems necessary. The question is both which difference (which gradient, which promise?) causes the migration of users and, complementarily, which mechanisms and factors, despite the obvious differences, remain constant; for this also presupposes the thesis of replacement: Since the needs structure of the subjects will not change abruptly, there must be needs that the old and the new medium serve equally, and characteristics that connect both media below the surface. And the deep irritation lies in the fact that these are obviously not the factors previously considered relevant. In this respect, it will be a question of criteria in which the upheaval can be conceived, and of a discussion of criteria proposed by some authors.

The view that falls on the object is necessarily particular. Comparing media and arguing in the space between the media is a fundamentally coarser procedure than describing individual media on their own terrain and from their own logic. This type of media theory can therefore offer no more than one perspective; and only if this is taken into account does the chosen, large-scale sketch make sense.

2. A Crisis of Images?

> "The optical image always shows us a completely momentary, self-contained and literally crystallized reality in the granules of the film or in the alignment of the magnetic particles of the electromagnetic bands. The concept of representation, which means that something existing is re-presented through the image, expresses precisely the way of working that is characteristic of this technique […].
> The synthetic image [on the other hand] does not represent the real, it simulates it. It shows no optical trace, no record of something that was there and is no longer there but creates a logical-mathematical model that describes less the phenomenal side of the real than the laws that govern it. What precedes the image is not the object (the things, the world...), the completed real, but the obviously incomplete and approximate model of the real, i.e. its description formalized by pure symbols. [...] The new image no longer bears witness to the real through the instantaneous inscription of light, nor does it reflect it, but it bears witness to an interpretation of this real that is elaborated with language and filtered by it."[13]

Couchot's definition makes the difference clear in all desirable clarity; photography had placed the phenomenal side of the real at the center of its system of representation, breaking with a metaphysical tradition that fundamentally mistrusted visual appearance. The basis was a machinery that seemed to guarantee the relationship between representation and the represented and to counter the arbitrariness of other systems with a reliable, iconic relation of signs. Realism

[13] Couchot, Die Spiele des Realen..., op. cit., pp. 347f. (transl. and add. H.W.).

and reference to the world were the basis on which the system of technical images was built, and which enabled the development of its other side, fiction, magic, and the fantastic.

The new, synthetic images now abandon this overall arrangement. From the surface itself, attention shifts to the structures that generate the surfaces, to the level of programs, formalized description and modelling, which Couchot, importantly, places in the vicinity of language. In this respect, the pictorial character of the pictures is almost peripheral. For the functioning of the models, it is almost irrelevant whether they are translated into images or other forms of representation. Iconicity loses its privilege, and symbolic mediation, it seems, is intact again.

And secondly, it is clairvoyant that Couchot does not simply declare the reference to the world to be obsolete, because arbitrary systems have of course always claimed reference. And again the question: How can such a radical change come about? Has the project of technical images reached a limit, has it exhausted itself?

An intelligent interpretation, I think, will have to assume that it is not external reasons but primarily changes on the terrain of the images themselves that are responsible for the upheaval. The universe of images was the answer to a describable historical problem, a reaction – this will have to be shown – to the fact that language and writing had fallen into a profound crisis. So, if the development is now also leaving technical images behind, it is reasonable to assume that a comparable crisis has now hit the pictures. The thesis is that internal contradictions in the universe of images have intensified in the course of historical development and are finding their solution in the current change of media.

3. Language Crisis Around 1900 - Shuddering at Social Mediation and Arbitrariness

The so-called ‘language crisis’ offers itself as a model case for the current situation. Dating to the period between 1850 and 1918, the crisis itself is largely undisputed in literary studies, regardless of how the media-historical environment is conceived. But how could a medium as powerful as language fall into a fundamental crisis?

Literary studies names the changes that have taken place within literature, and these can be reduced to a few key words, as they are now part of the general understanding of literary modernism.[14]

Grimminger, for example, describes how, in the course of the 19th century, literary texts became increasingly antithetical to language. Less and less a self-evident means of expression, language becomes an authority against which authors have to write and from which they have to wrest their project;[15] language is increasingly regarded as a system of conventions, even of constraint, and this experience is thematized in the texts themselves.

It was a language of higher education that the 19th century imposed on its authors. Intertwined with the conventions and linguistic rules of a repressive society, language seemed to be a system primarily of exclusion; large areas of subjective experience, but also of the new scientific world view, were painfully banned from language, as was technology which took up an ever-greater role in everyday life.

And it was precisely at the point of these exclusions that the new literary movements began. Grimmiger sees authors as divergent as Schnitzler, Kraus, Hofmannsthal, and Rilke as being characterized by the common motif of reasserting the repressed in the field of language. From

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[14] The German tele-teaching program ‚Funkkolleg Literarische Moderne’ already used the term ‘language crisis’ as a title of one of its study units (Grimminger, Rolf: Der Sturz der alten Ideale. Sprachkrise und Sprachkritik um die Jahrhundertwende. In: Funkkolleg Literarische Moderne. Studienbrief 3, Tübingen 1993, p. 431).

[15] In Kristeva’s ‘Revolution in Poetic Language’ this will already be the self-evident basis...

Nietzsche's critique of language to Freud, and from naturalism to the projects of the avant-garde which in their attack on grammar and semantics reveal the body of language itself, what had not been language until then gains the upper hand; the realm of lucid consciousness is strongly relativized, and a somatic moment prevails in writing. However, the role of language becomes precarious in the course of development.

The point at which the transition to technical media takes place is therefore almost evident. If Chandos[16] refers explicitly to the images and if opera first produces the 'Gesamtkunstwerk,' only to be inherited by cinema, then it seems only logical that the development leaves language behind. The technical media offer themselves as an ideal path because they are not dependent on conventions to the same extent. The 'recording of the real'[17] replaces the linguistic description, and a reconciliation with the excluded other seems to be possible.

The interpretation outlined in this way belongs, as I said, to the basic stock of contemporary literary studies, which takes account of the development of the media. As much as it has merit, it is irritating, at least from the point of view of the current situation, that the described development only makes sense as an irreversible one. For in what way should the doubt about the convention evaporate again? It seems more than unlikely that media development will simply return to language or to a language-analog system. And if computers don't fit the outlined because they function from the outset via symbols and thus conventions, then this at least calls the model into question.

I would therefore like to propose a different interpretation, an interpretation that takes up certain elements of what has been said but modifies the understanding of the language crisis. Essentially, it will be a matter of placing the concept of conventions on a firmer footing. The crisis of confidence that language has suffered will not be described as a cause, but as an effect that owes itself to a changed discourse structure, and it will become clear that at least the basic constellation of the underlying problem continues to have an effect into the present. The entire media development, this is the thesis, suffers from the problem that has become undeniably clear in the language crisis. And as different as the media-technical answers are, the project itself appears to be amazingly continuous, it is passed on – unresolved? – from medium to medium.

The text that every literary scholar would probably call the canonized testimony of the language crisis leads directly to the heart of the question: The Letter of Lord Chandos, which Hofmannsthal published in 1902.[18]

Dated back to 1603, this text initially contains the description of a personal experience of crisis; a fictional character suffers the collapse of his ability to speak and describes the course of this crisis in a way that is both vivid and terrifying; and although written retrospectively from the point of view of the gradually recovering person, the shock experienced echoes in the text itself.

The text has an enormous number of facets. Probably the most important point in the context pursued here is that the crisis emanates from the general concepts. The erosion does not affect grammatical structures, the formal side of language, or semantic units in general, but first of all concepts such as 'spirit,' 'soul,' or 'body,' and Chandos reports that it is above all 'elevated or general topics' about which it is increasingly impossible for him to speak. So, what does it mean

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[16] Hofmannsthal, Hugo von: The Lord Chandos Letter [1902]. In: Id.: The Lord Chandos letter and other writings, NY: NY Review 2005, pp. 117- 128.

[17] This is the term with which Kittler summarizes film and gramophone. (Kittler, Friedrich: Gramophone, Film, Typewriter [1986]. Stanford (Cal): Stanford UP 1999, pp. xxviii, xxxix, 12, 22, 24, 44…).

[18] See: FN 16.

when – quoted countless times – Chandos says that the abstract words "disintegrated in [his] mouth like rotten mushrooms"?[19]

If one assumes that the semantic system of language works with super- and subordinations and brings the terms into hierarchical relations, the abstractions form a relatively high level of this hierarchy which, although far from concrete perception, nevertheless represents a kind of core area of language. And what is more, it must be made clear that, at least until the Enlightenment, the semantic system was actually understood in the strictly hierarchical form of a pyramid: The concept of God at the top included all other determinations as an organizing center. All things in the world seemed to be derived from the concept of God and dependent on it, the system accordingly centered in a reassuring way, and only in this respect was there any order at all.[20]

When the death of God had now taken away the top of the pyramid, this meant the transition to a new, more complex principle of order. It was necessary to deal with a language that was still hierarchical but was now grouped around an emptied center and had thus become a polycentric system; even if the fundamental insecurity that resulted from this was recognized relatively late as a problem of language and had until then been dealt with exclusively on a philosophical level.

It is reasonable to assume that it could be precisely this erosion emanating from the center that reaches the general concepts in Chandos. But what is the goal of the erosion process? Is the transition to a language possible that in the end only names concretes?

Hofmannsthal at least hints at such a perspective; and now it becomes important that he describes the language crisis as an experience of decomposition. Starting from a previously given unity, the protagonist undergoes the experience of an apocalyptic disintegration that destroys all certainties and renders almost all categories invalid;[21] and the end point is not a restored unity, but a kind of abeyance that can only be grasped in aesthetic categories:

> "Since then I have led an existence which I fear you could hardly imagine, so inanely, so unconsciously has it been proceeding. Yet it is not too different from that of my neighbors, my relatives, and most of the landed gentry of this kingdom, and it is not entirely without happy and stirring moments. It will not be easy for me to convey the substance of these good moments to you; words fail me once again. For what makes its presence felt to me at such times, filling any mundane object around me with a swelling tide of higher life as if it were a vessel, in fact has no name and is no doubt hardly nameable. I cannot expect you to understand me without an illustration, and I must ask you to forgive the silliness of my examples. A watering can, a harrow left in a field, a dog in the sun, a shabby churchyard, a cripple, a small farmhouse – any of these can become the vessel of my revelation. Any of these things and the thousand similar ones past which the eye ordinarily glides with natural indifference can at any moment – which I am completely unable to elicit – suddenly take on for me a sublime and moving aura which words seem too weak to describe. […] I feel a blissful and utterly eternal interplay in me and around me, and amid the to-and-fro there is nothing into which I cannot merge. […] And the whole thing is a kind of feverish thinking, but thinking in a medium more direct, fluid, and passionate than words. […] It is that the language in which I

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[19] Ibid., p. 121.

[20] A reconstruction of this can be found in Bolzoni's work which also documents some of the medieval picture panels that place the figure of Jesus at the center of tree-shaped hierarchical semantic models. (Bolzoni, Lina: The Play of Images. The Art of Memory from Its Origins to the Seventeenth Century. In: Corsi, Pietro (Hg.): The Enchanted Loom. Chapters in the History of Neuroscience. New York/Oxford 1991, p. 16-65).

[21] "Everything came to pieces, the pieces broke into more pieces, and nothing could be encompassed by one idea." (Hofmannsthal, The Lord Chandos Letter, op. cit., p. 122).

> might have been granted the opportunity not only to write but also to think is not Latin or English, or Italian, or Spanish, but a language of which I know not one word, a language in which mute things speak to me […].”[22]

It is a terrain beyond language that ultimately becomes a refuge for the protagonist. The language of things has taken the place of language, and an aesthetic experience – with a clear emphasis on the visual – has supplanted the destroyed words. So, it is hardly surprising that Hofmannsthal also wrote a euphoric text on cinema.[23]

And the movement must inevitably transcend language, because a comparably radical concretion is unthinkable within language. Since every concept is subsuming and even the most concrete linguistic expression encompasses a multitude of individual things, the concretes are never available as concretes and the mechanism of abstraction is inscribed in language from the very beginning.

And now it will be necessary to include what was said above about the formation of the signifieds.[24] If the formation of meaning has been reconstructed as a mechanism that cumulatively generates signifieds from concrete discourse events (i.e. from chains of signifiers), and if this is the basis for all linguistic processes of abstraction, it follows that the general terms can be ordered according to the level of their generality. In the case of abstracts such as ‘mind,’ ‘soul,’ or ‘body,’ one could say, the character as a signified is particularly obvious.

The language crisis thus obviously attacks language from the side of the signified. Or, to put it more reasonable: If the abstracta fail, this indicates that a disruption has occurred in the formation of meaning, that the transition from discourse to system, normally a blindly automatic part of linguistic functioning, is no longer taking place smoothly, unconsciously and ‘silently.’ So, it is not the ‘conventions’ but the signifieds that are in crisis. And the conflict named by Grimminger shifts from the ‘conventions,’ where it could possibly be dealt with, to the frighteningly general level of the semiotic itself.

Whether such a semiotic/technical interpretation actually opens up anything remains to be seen when we will discuss the possible causes of this change. However, the question is already posed differently; while the thesis that ‘trust’ in language has suddenly been shaken claims an upheaval primarily in the history of ideas,[25] the question now also turns to factors which, themselves blind, influence the signification processes. But what could such factors be?

If we first return to the level of manifest utterances and to Chandos, a second point in the text is a tremendous shudder at the social character of language.

> “I found myself profoundly unable to produce an opinion on affairs of court, events in Parliament, what have you. […] It happened to me that, when I wanted to scold my four-year-old daughter, Katharina Pompilia, for a childish lie she had told and impress upon her the necessity of always telling the truth, the ideas flowing into my mouth suddenly took on such iridescent hues and merged into each other to such a degree that I had to make an effort to sputter to the end of my sentence, as if I had fallen ill. I actually turned pale and, feeling an intense pressure on my forehead, left the child, slammed the door

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[22] Ibid., pp. 123, 125, 127, 127f.

[23] Hofmannsthal, Hugo von: Der Ersatz für die Träume [1921]. In: Kaes, Anton (ed.): Kino-Debatte. Texte zum Verhältnis von Literatur und Film 1909-1929, pp. 149-152.

[24] (Note on translation:) The cumulative formation of meaning is the main thesis in the 4th chapter of my book ‘Docuverse;’ the text is reprinted in the present volume, see: chapter 3, pp19-34.

[25] Or in the interaction between a repressive society and an exclusionary language, the classical model of base and superstructure...

> behind me, and did not recover somewhat until I was riding at a good gallop over secluded pastureland.
> But this affliction gradually broadened, like spreading rust. Even in simple, informal conversation, all the opinions which are ordinarily offered casually and with the sureness of a sleepwalker became so fraught with difficulties that I had to stop participating in these conversations at all. It filled me with inexplicable fury (I concealed it just barely and with effort) to hear such things as: This matter turned out well or badly for this person or that; Sheriff N. is a bad person, Clergyman T. is good; we ought to feel sorry for Farmer M., his sons are throwing their money away; someone else is to be envied because his daughters are thrifty; one family is coming up in the world, another is on the way down. All of this seemed to me as unprovable, as false, as full of holes as could be. My mind forced me to see everything that came up in these conversations as terrifyingly close to me. Once I saw through a magnifying glass that an area of skin on my little finger looked like an open field with furrows and hollows. That was how it was for me now with people and their affairs. I could no longer grasp them with the simplifying gaze of habit. Everything came to pieces, the pieces broke into more pieces, and nothing could be encompassed by one idea."[26]

The veil of habit had concealed what now emerges with terrifying clarity: that language is based on social agreement and, permeated by value judgments, is by no means aimed at knowledge and truth, but far more at social consensus. With this idea and the polarity of truth and lies, the passage echoes Nietzsche.[27] According to Nietzsche, being truthful means, "[using] the usual metaphors," and "[lying], herd-like, in a style which is binding for everyone."[28]

The entire, impressive conceptual apparatus with its pyramidal order, its laws, privileges, subordinations and boundary definitions is built on a slippery foundation and its inner rigidity is a defensive structure; despite its claim to truth, language emerged from human practice and is "anthropomorphic through and through."[29]

This is the other side of the concept of 'convention,' the insight into the fundamental arbitrariness of language. The insight itself, however, is by no means new in the history of philosophy; if it comes to consciousness in a shocking way with Nietzsche and if the social mediation takes on traits of a pronounced horror, then this indicates that something has shifted in the object itself. But what could this be? Why can language as a whole suddenly be perceived as a 'lie'?

4. Language Crisis: the 'Theory of Two Minds'

The answer to be attempted here starts with the concept of social mediation; however, the approach must now, admittedly a hard break, be changed to a sociologically functional description. Language, of course, is always intersubjective; what appears variable, however, is the social (and semantic) space that language encompasses, and it could be possible that here lies a key to the language crisis as well as to media development.

The motif has already been addressed in the section on the segregation of discourses and the fantasies of unification,[30] and in the section on collective memory, when the connection be-

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[26] Hofmannsthal, The Lord Chandos Letter, op. cit., pp. 121f.

[27] Nietzsche, Friedrich: On Truth and Lie in an Extra-Moral Sense [1873]. Oxford: Quadriga 2019.

[28] Ibid., p. 7.

[29] Ibid., p. 9.

[30] (Note on translation:) … Chapter two in the book from which the present chapter is taken...

tween the formation of tradition and media problems was discussed with Hejl.[31] The focus there was on the concept of social differentiation, and Hejl had shown that social differentiation also leads to a drifting apart of knowledge bases. If we take up this idea, we can create a model that describes the problem, somewhat roughly and on an initially socio-economic basis; based on Luhmann and Hejl, I will consider the division of labor and the problems of social differentiation.[32]

Hejl proposes to distinguish between two historical types of organization.[33] The first would be that of internally relatively poorly differentiated social systems, as is assumed for tribal societies or for historical agrarian societies. A society in which the majority of people are concerned purely with the acquisition of food is dependent on the corresponding basic qualifications being held by each of its members, i.e. socially redundant to a high degree. This redundancy is created by means of oral tradition formation and the inscription of practical manual skills into the bodies; mythical or religious systems ensure the coherence of world views; and the extensive restriction to a relatively narrow geographical living space allows what lies outside this horizon to be excluded as irrelevant.

There must have been no society that could have managed without social differentiation, such as the division of labor between the sexes, and in which cultural differences, wars, travel and long-distance trade had not always perforated the horizon; what Hejl emphasizes in the concept of 'communities,' however, is the relative self-sufficiency of regionally limited collectives in which neither external reference nor internal differentiation determine the cycles of life.

The system described in this way is limited by the fact that its restricted internal complexity also blocks certain development opportunities, primarily because the memory capacity of the individual members is restricted. This is exactly where the second type of organization comes in; to exceed the aforementioned limit, labor and the necessary mental and physical knowledge are divided up. This enables a rapid increase in social complexity, the development of ever more specialized technologies and, as a result, a regional specialization of production, culminating in the international division of labor, which today encloses the entire globe.

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[31] (Note on translation:) See ibid., chapter three (cited there: Hejl, Peter M.: Wie Gesellschaften Erfahrungen machen oder was Gesellschaftstheorie zum Verständnis des Gedächtnisproblems beitragen kann. In: Schmidt, Siegfried J. (ed.): Gedächtnis. Probleme und Perspektiven der interdisziplinären Gedächtnisforschung. Frankfurt a. M.: Suhrkamp 1991, pp. 293-336).

[32] Hejl sees in the division of labor a particularly clear picture of what Luhmann describes as the internal differentiation of social systems. In Luhmann's own work, however, the theory is more general; see, for example: Luhmann, Niklas: Veränderungen im System gesellschaftlicher Kommunikation und die Massenmedien. In: Schatz, Oskar (ed.): Die elektronische Revolution. Wie gefährlich sind die Massenmedien? Graz/Wien/Köln 1985, pp. 13ff.; L., N.: Social Systems [1984]. Stanford (Cal.): Stanford UP 1995, p. 7; L., N.: Einführende Bemerkungen zu einer Theorie symbolisch generalisierter Kommunikationsmedien. In: ders.: Soziologische Aufklärung. Bd. 2, Opladen: Westdeutscher Verlag 1975, pp. 170ff.
If I choose the division of labor (and not social differentiation) as the focal point in the following, it is primarily in order to arrive at a more tangible idea and to avoid the very high level of abstraction at which Luhmann's theory operates. So, by no means a Marxist-emphatic concept of 'work,' as I was told at a conference, is the necessary foundation of the argumentation. Of course there are social differentiations that have nothing to do with the division of labor, and the economy is not the basis above which a cultural 'superstructure' rises; nevertheless, I would hold on to the idea that production and economy produce very profound social divisions; directly related to physical reproduction (and necessity), to blind practices, to the evolution of technology and to 'material constraints,' economic divisions have very little arbitrary character; and whoever negates such differences runs the risk of dissolving what is to be grasped into the realm of signs. In the same sense, a distinction is made in other parts of this work between irreversible practices and reversible (symbolic) trial action.

[33] Hejl's separation between communities and societies has already been mentioned.

As far as 'information processing' on a social level is concerned, this process means the elimination of redundancy. Individual stocks of knowledge[34] necessary for production no longer have to be held redundantly hundreds of thousands of times, but only hundreds, so that the rest of the minds and bodies are freed up for new stocks of knowledge.

On the one hand, the social process must ensure that the specialized minds and activities remain reliably related to each other, which requires elaborate mechanisms of internal organization and social mediation through the market and comparable institutions; this objective/organizational side is referred to in the Marxist context with the term 'objective socialization.'

The second difficulty is that objective socialization alone does not solve the problem, so that the division of labor initiates and necessitates a myriad of communication processes. And that, according to Hejl, is the systematic place that the media occupy. Communication essentially takes place in order to relate the differing bodies of knowledge to one another, or, to put it more clearly: Division of labor and media communication are systematically and complementarily interrelated.

Communication becomes the direct counterpart of the division of labor, because it must mediate what is separated by the division of labor – in substance, geographically and functionally. There is thus a direct relationship between the degree of social differentiation and the social need for communication;[35] and as difficult as this category is, it reliably indicates that communication is not a luxury.

This now gives rise to a second consideration which can no longer be based on the witnesses mentioned and which I would like to call, in mild irony towards my own development, the 'theory of two minds.' The consequence of what has been described is that the head of each individual undergoes a significant split. Instead of one head, one could say, everyone now needs two heads – a working-sphere head differentiated according to professional competence, whose specialization tends to isolate it from all other specialized heads, and a second, 'general' head that enables the person to remain 'human' and communicate. It would be the task of the second head to maintain those stocks of knowledge that still have to be redundantly for every member of society. The fact that both heads diverge constitutes the tension that will be discussed in the following.

Put less boldly, the problem has of course been dealt with many times. The example of the bourgeois salon and the bourgeois public sphere makes it clear how difficult it was, even in the 18th century, to bring the two minds together again and maintain the ideal of an unconstrained consensus in social discourse against the increasingly diverging world views.[36]

The general problem is that the specialization of working-sphere minds turns into a specialization of world views. All efforts to create a public sphere, social coherence and communication must therefore develop a centripetal force that is able to balance the natural centrifugal forces of social differentiation. And conversely, social differentiation can only progress as far as the coherence of communication can be guaranteed, even if only just.

As crude as this general model is, as I said, it makes clear what is important in context; for language this means that it is increasingly burdened as the division of labor progresses. As an instance of social mediation, it must relate the divergent specialized languages and language

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[34] The term is of course more than problematic because 'knowledge' should not be reified...

[35] When the first coast-to-coast telegraph cable was switched in the USA, it was seriously denied that the geographically separated partners had anything to say to each other.

[36] See for example: Habermas, Jürgen: The Structural Transformation of the Public Sphere. An Inquiry into a Category of Bourgeois Society [1962]. Cambridge (Mass.): MIT Press 1989.

games back to the language in the singular that the members of society continue to share; and language must absorb the resulting tension in its internal structure.

Specifically, it must provide an exploding number of ways of speaking for everything that is the case (or whatever entities an independent economic or scientific practice produces[37]), and at the same time a set of reliable categories and basic concepts that is capable of consensus for the majority of language users; and it is obvious that this could be a structurally aporetic task. Every new insight and every new practice that does not lead to one of the rare syntheses[38] forms a new microcosm and forces a differentiation of language; this is increasingly coming into conflict with the limited capacity of individual language users; the stock of intersubjectively shared categories will not increase and differentiate to the same extent. This means that the decisive crisis will occur in the core area of language. The central categories, the abstracts, will become increasingly shattered into perspectives, their generalizing power will no longer be sufficient to bridge the different uses; they will lose confidence and become destructively iridescent/ambiguous.

The argument matches precisely not only the phenomenology of the language crisis, but also the determination that the first victim is the formation of signifieds. Now it becomes clear why theory – merely following everyday consciousness? – has become accustomed to placing the signified in the vicinity of 'ideology.' When the signifieds 'lie,' this expresses the experience of an alienation that distances one's own world view and one's own certainties from the determinations of language and that makes one's own speaking – unstable and endangered enough – a speaking against language.

But there is no language without signifieds. There are only signifieds whose character *as signifieds* is more or less obvious;[39] and there is a discursive practice that provides the arena both for language and for doubts about language. It is undeniable, however, that discourse practice between 1850 and 1918 left the terrain of language.

5. Technical Images

The entire development of the media landscape, I think, can be understood as a sequence of attempts to deal with the problem outlined above. And this is obvious for the technical images.

Photography and film were enthusiastically welcomed as a liberation from language;[40] they realize in a very direct way what is anticipated in Chandos as an aesthetic experience, and they

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[37] This is probably most impressive in chemistry, law and the social sciences, but also in technology, insofar as this does not itself function as a mute substitute for language; "Even the smallest individual part of a modern car, for example, has names that cascade over the layman when the mechanic starts to take apart a differential gearbox, for example." (Hagen, Wolfgang: Die verlorene Schrift. Skizzen zu einer Theorie der Computer. In: Kittler, Friedrich A.; Tholen, Georg Christoph (eds.): Arsenale der Seele. Literatur und Medienanalyse seit 1870. München: Fink 1989, p. 224 (transl. H. W.)).

[38] $E = mc^2$ is one of the syntheses that no longer took place on the terrain of language.

[39] The signifier 'freedom' will be perceived as highly ambiguous, the signifier 'steam locomotive' less so, because it at least corresponds to a describable collective of physical entities.

[40] "The fact that [...] the images are mute is one more attraction; they are as mute as dreams. And deep down, without knowing it, [...] [people] fear language; they fear in language the tool of society. [...] Above the lecture hall is written in golden letters: 'Knowledge is power,' but the cinema calls out more strongly: it calls out with images. The power that is conveyed to them through knowledge – there is something unfamiliar about this power, not quite convincing, almost suspicious. They feel that it only leads deeper into the machinery and further and further away from real life, from what their senses and a deeper secret that resonates beneath the senses tell them is real life." (Hofmannsthal, Der Ersatz..., op. cit., pp. 149f. (transl. and add. H. W.)). – "Nowadays, we are no longer so inclined to grant the word such absolute hegemony. It is perhaps more appropriate to say that words have

choose the same way out of the crisis: Photography and film are in fact the radical type of a language that articulates itself exclusively in concretes. They play off the individual case against the increasingly false general and the diversity of examples against the unity of the concept. If the concept of 'table' can indeed be dissolved into the plurality of concrete, photographable tables, this means above all that abstraction and subsumption, and ultimately the formation of signifieds, can be avoided.

And the same also applies to other features that separate technical images from language. Seemingly effortlessly, the images manage without the fixed network of interrelations that characterizes the system of language; they contrast the conventionalized rules of language with a much more open structure in which there are rules, but which have no load-bearing function for the system of representation and are therefore not dependent to the same extent on social consensus-building. And 'openness' is generally one of the central promises: Where language seems to rely on mandatory meanings,[41] the images always offer a multitude of readings; perception and interpretation do not coincide to the same extent and this opens up a space for ambiguities that are not understood here as destructive, but as a basis for understanding. Convention and consensus do not appear as a prerequisite for communication, but as its possible result; the visual text accordingly as an offer that strives for understanding but cannot force it.

When Metz called film a 'speaking without language,' this was not only a statement on the semiotics of film.[42] It was also the most succinct formulation of the utopia that film opposes to language and that negates the systemic character of language.

Speaking without language would be speaking freely. It would be a way of speaking that would not have to speak against language, but only against the competing texts, and that could turn to an open future unencumbered by the past condensed in the code.

But how have technical images solved the second problem of language? If social differentiation (and in short: the division of labor) had threatened the coherence of language and eroded its central signifieds – what good would a system be that did not possess comparable central signifieds at all?

Now it becomes obvious that the technical images produce coherence in a completely different way. Assuming the thesis of the 'two heads' to be valid, it becomes clear that the technical images by no means invest equally in all semantic fields, but that they are almost exclusively concerned with the second, the 'generally human' head. The project that photography, cinema and television have pursued from the very beginning is to strengthen it and equip it with world views that resist the danger of being torn apart as successfully as possible.

Quite contrary to their claim to represent social totality, the visual media have fixed themselves on a relatively narrow range of topics – people, love, crime and politics; and if it has often been emphasized that the visual media are primarily entertainment media, this also speaks in favor of assigning them to the second head, if one sees in this the 'leisure' head, which stands opposite the working-sphere head.

The condition of coherence was thus that the semantic fields with the strongest centrifugal tendency – work and the socially highly differentiated areas – were largely left out of the realm

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something overly clear for us nowadays and yet something strangely undifferentiated." (Friedell, Egon: Prolog vor dem Film [1912]. In: Kino-Debatte, op. cit., p. 45 (transl. H. W.)). See also the foreword of the same volume: pp. 17ff.

[41] Of course there are also ambiguities in the case of literature; but there they appear much more clearly as a threat to the understanding of meaning...

[42] "[It] seems appropriate to look at the cinema as a language without a system." (Metz, Christian: Film Language. A Semiotics of the Cinema [1964/67]. Chicago: University of Chicago Press 1991, p. 65; see also: Chapter 3: The Cinema: Language or Language System? Ibid., pp. 31ff.).

of images. These could, it seems, be left to language, once language had been unburdened in the core area and the general terms no longer had to bear the full burden of integration. Film and television took over the central area and brought together – the term 'mass media' captures this fact – broad audiences on the terrain of a relatively small number of texts.

In this respect, the tension between two moments seems to be constitutive for the visual media: On the one hand they are radically concrete, on the other hand they have not replaced the concreta of language, but rather the general concepts from which they seemed furthest removed. The fact that visual appearance and functional determination fall far apart in this way is not a defect, but on the contrary is precisely the point of the visual media: Their concreteness denies the problem that the general concepts clearly had, and only in this way could the technical images become the 'solution' to the language crisis.

The result was a system whose entire structure could not 'lie.' If the technical images were always spoken about in categories of realism, truth and reference to the world, this was by no means solely due to the iconicity and the reference to the real guaranteed in the machinery; for of course it could have been admitted at any time that the images were designed, selected, manipulated, staged, or fictitious. What was important above all was that social mediation seemed to have been eliminated and speaking without language seemed possible. The threat emanated from the signified and from the insight into social mediation; in contrast, the intervention of the individual creative subject seemed a relatively manageable opponent.

6. The Crisis of Images

This reinterpretation of the initial argument is important because it provides a key to analyzing non-iconic systems as well. First of all, however, it paves the way for the consideration of what, 100 years after the crisis of language, might have happened to technical images. Obviously, the pictorial universe has proven to be unsustainable, and developments are pushing beyond the solution found with astonishing force.

The fact that a 'crisis of images' has actually occurred can be seen in a variety of symptoms and most obviously in the fact that the quantity of circulating images has grown beyond any conceivable measure. Although theory has long regarded this growth as a sign of health, more and more voices are now speaking of a 'excrescence' of the image universe.

It has been said that the system is proliferating,[43] dissolving into an unmanageable number of increasingly insignificant individual events,[44] and that the multiplication of television channels in particular envelops recipients in a veritable fog of images.[45]

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[43] Comolli had already written in 1980: "...if cinematic representation is to do something other than pile visible on visible..." (Comolli, Jean-Louis: Machines of the Visible. In: Lauretis Teresa de; Heath, Stephen (eds.): The Cinematic Apparatus. London 1980, p. 141).

[44] See, for example, the 'zero medium'-thesis by the German essayist Enzensberger: (E., Hans Magnus: Die vollkommene Leere. Das Nullmedium oder Warum alle Klagen über das Fernsehen gegenstandslos sind. In: Der Spiegel, Nr. 42/20, 16. 5. 88).

[45] The widespread resistance to the privatization of television in Germany probably has one of its reasons here; regardless of the content distributed, it seems to have deeply irritated the audience that 'television' no longer speaks with one voice. At present, it is above all Kamper who notes "massive disturbances at the peak of image production" and almost imploringly calls for the "breaking out of the image cave, out of the immanence of the imaginary." (Kamper, Dietmar: Bildstörungen. Im Orbit des Imaginären. Stuttgart 1991, S. 7f. (transl. H. W.)). And the Frankfurter Rundschau sneers: "The man admits to being sad. Blunt images everywhere, without reflection. Television, movies, magazines, computer games. Dietmar Kamper is desperate. Images without end. He speaks of the parable of the cave: Modern man hangs out in front of screens and terminals, in cinemas and gambling dens – image caves everywhere. The lectures that the sociologist from the Free University of Berlin gives at renowned institutes for

One difficulty is that such statements can hardly be distinguished from those who have always warned against images and, usually from a culturally conservative point of view, believed they had to protect literature from images. The phenomenon itself, however, is probably largely undisputed.

And this is where an interpretation comes in that sees quantities turning into qualities. First of all, it is clear that the quantity of the images erodes the events that can be photographed. The surfaces have multiplied infinitely into the images, and the images in turn threaten to bury the images and the events beneath them; the never-seen becomes increasingly rare, and the suspicion arises that the photographable surface of the world could turn out to be finite after all.

Beyond that, however, the quantitative accretion touches the substance of the images. The accumulation of acts of reception will inevitably lead to the images being perceived less and less concretely and as individuals. They will begin to layer and overlap; inevitably, the constant structures, the schemata and the patterns that organize the images – beneath their different surfaces – will emerge; in short, exactly the effect described above as 'condensation' will occur.[46]

And this process, this is the point, is a process of conventionalization. Despite their concrete differences, the images enter the machine that transforms discourse into a system and extracts structures from concrete discourse events. And this increasingly autonomous machine confronts the individual image. It is by no means the case that only the memories of the recipients and their expectations change, while the images can save their substance; even if it initially has its seat in memory (or makes use of the recipients' memories), the machine of condensation is a social arrangement; like language confronts speech, it limits the space in which meanings are constituted and forces the individual images to relate to it as a binding background. In this respect, the images themselves by no means remain what they are.

And it is only against this background that it makes sense to speak of a conventionalization process. How quickly conventionalization takes place, how quickly the images become a 'language,' depends on the density of the storm of images; however, it is important to note that conventionalization cannot be avoided in principle.[47]

The images thus seem to be heading towards precisely the problem that broke open in the language crisis. The distance between language as a conventionalized system and the technical images is in any case diminishing, and the images are in danger of losing their particularity of being 'speech without language.'

And this constitutes the tension – the aporia? – that the universe of images is currently laboring with. The second observation is that technical images find conventionalization extremely difficult to bear. It is strikingly at odds with the claim to concreteness and ultimately uniqueness that was mentioned above as one of the central characteristics. Tied to the moment, to the detail and to chance, photography has always claimed to be able to capture unrepeatable constella-

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visual media, at the Academy of Arts in Berlin, at the Academy of Media Arts in Cologne, and for Franco-German TV culture channel 'Arte,' express an infinite mistrust of the world of images. Kampers speeches, which are now also available in book form, were held in front of people who have only one thing in mind: To produce images, as powerful images as possible, as compelling and ambitious, as pointed as they are convincing. But they like Kampers' motif of Plato's cave of images." (Wesemann, Arnd: Notausgang aus der Bilderhöhle. In: Frankfurter Rundschau, 3. 2. 1995 (transl. H. W.)).

[46] (Note on translation): As already mentioned: The concept of condensation is the focus of the 4th chapter of my book 'Docuverse;' the text is reprinted here, see chapter 3.

[47] The hope for permanently 'fresh images,' as the German director Werner Herzog expresses in Wenders' film 'Tokyo Ga' on the Tokyo-Tower, is probably doomed to failure...

tions, irreducible concretes, and thus to avoid the formation of signs;[48] the basic construction of technical images, one could say, makes head against conventionalization.

If it now becomes apparent that a 'literal repetition' and a complete identity of the signifiers is not at all necessary, but that (following the pattern of Galton's composite photographs) different concreta also enter into accumulation processes and condense into schemata, then the foundation on which the technical images are built collapses. The insistence on concretion loses its meaning and the skeleton of the structures emerges irrefutably.

In short, this seems to me to be the physiognomy of the image crisis that characterizes the current media landscape. As an aversion to repetition and clichés, in the feeling that the images contain less and less that justifies lasting attention, and in an increasingly distracted, ironic or 'blasé' reception, the crisis has now reached everyday consciousness.[49] Theory, of course, will describe it in different criteria; the fact that these are the same ones that were relevant in the case of the language crisis indicates that a constant problem is indeed at work at the bottom of the development. And the same criteria, I claim, now make it possible to analyze the data universe as well.

7. Computers

The first conclusion to be drawn from what has been said is that in the data universe the formation of signified obviously does not 'fail,' as the consideration of condensation had suggested; the formation of signification does not fail, it *is avoided*.

It is the point of the new medium that it blocks the formation of signifieds; completely parallel to the technical images, it establishes a system that can manage without conventions, without language and without 'condensation,' and when the technical images had saved themselves into concretion and iconicity, it is now the idea of *a textual universe liberated from language* to which hope is transferred.

So this is the reason why computers present themselves as a universe of material texts, whose linguistic character is not taken into account; and this is the only reason why the new medium, although largely bound to written texts,[50] is not seen as a return to language and its problems.

The surface of the texts has taken the place of language. And here, friendlier conditions seem to prevail than in any text universe before: Since the total volume is not limited and every point in the new universe is equally distant, everyone can become an author on an equal footing; no publisher selects, no rejection threatens, no silence is enforced as in the case of one-way mass media. Consensus-building seems superfluous, and the hierarchizing social machine has, it seems, lost its power.

So, if the accompanying discourse repeatedly emphasizes the accessibility and anti-hierarchical character of the new medium, this can now be deciphered as the new variant of an established utopia: the utopia of suspending social mediation.

And the parallel goes much further. When it was said above that the data universe pursues the ideal of depicting the social structure in a 1:1-map, this also does not imply an acknowledgement of the fact that signification is fundamentally socially mediated and that society always

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[48] Repetition seemed to play a role only in technical reproduction, and in this form not to damage the unrepeatable.

[49] Empirical studies show a rapid decline in satisfaction on the part of television viewers; see: Winkler, Das Ende der Bilder, op. cit., pp. 229f.

[50] (Note on translation:) The book was written in 1996, and the project was to understand the 'Docuverse,' i.e. the WWW.

already has a share in each individual signification process as an instance of standardization, but almost the opposite: The idea that everybody, each facet of society, places 'its' representation in the new universe means above all that everybody speaks for himself and for this reason alone cannot lie.[51]

In this respect, this fantasy is a direct equivalent to what the radical concreteness of technical images is supposed to achieve; there, too, things should stand for themselves and represent themselves, in the sense of an 'immediate' and thus unadulterated representation. Despite all appearances, this is an (albeit unusual) variant of iconicity. Representative and represented are connected by a direct relation; it is the enunciator who is responsible for the text, and the text refers back to nothing but the enunciator. And in this way 'truth' must also arise at the level of the overall structure, as the image of the 1:1-map asserts.

At the bottom of the new media-technical arrangement lies – this is the sum – the deep-rooted horror of arbitrariness. As a constant motif, this horror links the language crisis with the chain of its media-technical solutions, and media history as a whole appears as a sequence of attempts to find a technical answer to the problem of arbitrariness.

We must bear in mind that the concept of arbitrariness is fundamentally twofold, and encompasses both an aspect of a free or elective decision, and the seemingly completely opposite aspect of a socio-historical determination. This now becomes legible as the coordinate system of a double horror: The signs have no reliable support in the world, which places them in a dangerous state of limbo, and – chained to history – they are by no means 'free' after all; their agreement character opposes any dissenting speech as resistance; and far removed from any 'truth,' they derisively refer back to past discourses (the lies and errors of the past).

All media history is an attempt to escape from this more than uncomfortable situation. The technical images chose to flee into iconicity, which promised to chain the signs to the world, to limit their whirr and to counter the pressing past with a radical present; the 'recording of the real' (of sounds and, one should add, of measurement data[52]) followed the same path and delivered an iconicity without images; and media history seemed to prove its worth in erecting a dam against the threatening arbitrariness.

When this solution collapsed in the image crisis, the shock was all the greater. And at least some of the commentators had known it all along; they outdid themselves in dismantling the images' claim to validity and showing that iconicity had always failed to meet the expectations; the privileged reference to the world was, of course, a sham, and it was overdue to recognize that sign systems did not refer to the world, but exclusively to other signs.

Interestingly, it was exactly the same concept of 'simulation,' developed in the critique of technical images, that was now used to describe the new medium. The computers hardly seemed to connect to the history of the images in any meaningful way, but all the more clearly to their critique, and this gave the impression that the computers had simply given up what had proved problematic with the images. Since then, the consensus has been that the computer models do not claim to have any reference to the world.

From the reconstruction attempted here, however, it should have become clear that the opposite is the case. As soon as one does not start from the appearance of iconicity, but from its function of warding off arbitrariness, and as soon as one splits arbitrariness into its determinants – social mediation, the curious mix of freedom of choice and historical motivation, the link to history – the striking continuity that connects the computers with the technical images becomes apparent.

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[51] Tim Berners-Lee, inventor of the World Wide Web, says with great confidence: "There will be an explosion; more and more people will write about themselves." (Quoted from the German TV-channel 3sat, 06-21-95.)

[52] It is to Kittler's credit that he repeatedly incorporates the approaches of natural science...

The computers have given up iconicity, but they continue the actual project; and the project consists of providing the endangered-arbitrary signs with a support (a series of ever new supports).

If this thesis is plausible, it means that media history has a clearly strategic aspect, on at least two levels. Completely equivalent to the real implementations, their performance or their failure, the accompanying discourse can take on the function of either strengthening or eroding confidence in the substantiality of the signs. In this respect, the ideas, hopes and wishes of the sign users are directly involved in the signification processes. They are 'productive' in Foucault's sense; and the decision to include them in the analysis is confirmed.

In general, sign systems seem to go through a cycle that leads from a hopeful early phase to a stable, naturalized domination phase, only to end in 'disillusionment,' to which media history then responds with a technical innovation that allows the cycle to restart. Within the individual medium, everything will depend on how long the hopes of the early phase can be kept alive and what they contribute to the stabilization of the system.

In the case of computers, the fact that the accompanying discourse denies any reference to the world in an almost bold manner must be understood as a cover strategy under which the actual hopes develop all the more vigorously. And we should have been warned anyway: A technology that enters the stage under the label of 'information' will have to put up with the question of what it is providing information about, i.e. what the object of the collected information is; and if empiricism often confuses its 'data' with reality anyway – which prompted Flusser to make the ironic remark that one should rather speak of facts (i.e. what is made) than of data (i.e. what is given) – then this also indicates that all the problems of the concept of the sign, of meaning, and of reference will also return on the terrain of the new medium.

For the time being, however, they are not recognized as such, and this is what makes the 'early phase' so charming. Only on this basis is the rhetoric of the new possible, which allows technical innovation to stand in for the solution of non-technical problems, and historically shifts what had proven to be precarious on the terrain of the 'overcome' media.

The project of deciphering/exploring the world cannot be abandoned, unless the world has always already been deciphered. Competing systems are conceivable, which – like the competing discourses – test different ways of functioning, modeling and levels of validity, but none of the media systems will completely fall out of the search movement itself.

Their historical sequence, the cycle between hope and disillusionment, confidence, swelling suspicion, crisis and media change, must therefore be seen as the mode in which the search articulates itself historically. As a macro-discourse above the level of discourse, which in turn is a macro-structure above the forward thrust of the individual texts.[53]

The precise function of attacking the cover strategy is not to accelerate the path to disillusionment, but to reduce the effort it takes to read the new medium. In fact, we explore the media like a text; we immerse ourselves in it and sound it out, spending a considerable amount of time familiarizing ourselves with its inner structure. This applies to computers in a particularly ob-

[53] This is where the initial intuition to view media history as a story parallel to the individual texts comes to fruition… Outside my window, a pair of magpies have started to build a nest; for about three weeks, the birds worked extremely hard, battling with unruly branches, enduring gusts of wind and even accepting pieces of plastic as building material. In the meantime the project has stagnated, as if it could not prevail against the extreme traffic noise; and I realize that it bothers me that the narration hangs; the urge of the text will not come to an end in this case, the female will lose the eggs somewhere, there will be no little magpies, no feeding, no little problems and no first flight from the nest. The arc will not close, and I am dissatisfied that I will remain dissatisfied.

vious way.[54] And this must also support the idea that the search has turned away from the world and is now instead directed towards the media complexes themselves. But this 'instead' does not exist; there is a reference to the world only through the concentration on texts (and media). And there are sign systems whose functioning and claim to reference are so little clarified that they can impregnate themselves for a time against the uncertainty and frustration that emanate from arbitrariness. But inevitably they all will return: The reference and the doubt about the reference, the reservation about a system on which one is simultaneously dependent, the horror of social mediation and the realization that even the new medium cannot escape it.

If we return from the level of such general considerations to the concrete media upheaval, it is noticeable that the transition from images to computers has lost much of its sharpness. The difference is not moderated by the fact that computers also deal with pictures, but by the fact that the images themselves have proved to possess their own (and hidden) structure and have thus moved closer to the computer models. When the process of conventionalization causes the 'skeleton' of the images to emerge from beneath the radically concrete surface, then it seems only logical that media history now favors a medium that relies on abstraction, structure and schemata from the outset. The first continuity would be that the recipients have perhaps always been interested – at least also – in structures, in the case of images in graphic-visual orders and formations (and their semantic implications), in the case of film in complex temporal-semantic patterns.[55] The innovation would therefore be that the new medium isolates and explicates this level. The analysis would have to follow this and develop a language that makes the structural designs of the new medium describable. The debate about linearity and hyperspace can only provide a first approximation here; it will be necessary to observe the concrete textual practices in the new medium and extract from them, step by step, what they have in common. Behind the language of the documents, at any rate, we'll find the structure of their arrangement in hyperspace; and the hope that the arrangement will achieve what the documents, the schemata and the language as well as the image media fail to do.

Finally, the last consideration concerns the role that images play in the new medium itself. If computers are able to process numbers, texts, algorithms, images, sounds and whatever else, this does not mean that this happens on the same level and that all symbolic systems are equally suitable for being processed in bits and bytes. There is a fundamental difference between whether a computer is to store and send texts written in language or whether it is to search them according to meaning criteria, whether measured data is to be evaluated with the help of statistical procedures or images are to be recolored on a monitor.

The main question therefore seems to be what the computers can do with the different types of data. The algorithms available for the individual symbolic systems vary greatly in their performance and efficiency; the most powerful are probably in the field of numbers and mathematics, which as a coherent system of transformation rules allows impressive permutations and, above all, data reductions; and much less impressive, for example, in the field of natural language, where keyword searches and word frequency statistics still mark the state of the art.[56] (Haptic and olfactory 'data' seem to resist the data form itself).

In the spectrum thus marked out, the images occupy a position far removed from the slender and elegant mathematical operations. It is by no means to deny that there has been an explosion

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[54] No one would say that they sit in front of the television "to get to know it;" in the case of the computer, this is standard.

[55] In this perspective, the multiform surfaces would be a kind of comforting foreground that makes the structural message palatable to the consciousness, completely parallel to the dream and its 'regard for presentability' and to the thesis that the culture industry does not provide concretizations but reconcretizations.

[56] (Note on translation:) …1997!

of digital image processing, post-production and image synthesis. The thesis, however, is that this is more of a feat of strength than a sovereign conquest, and that the exorbitant resource requirements of image processing already indicate that images (and, f. e., real sounds) are not exactly the strength of computers.

And what's more: we will have to ask ourselves whether and to what extent it is images at all that the computers are dealing with in image processing. What appears on the screen as an 'image' is initially addressed exclusively to the human being. As a result of operations that are largely external to its image character, only on the screen does what is depicted take on a two-dimensional form; the programs stand still and wait for the aesthetic assessment and intervention of the user. The pictorial character of the images, one could say, is completely inaccessible to computers. There are no algorithms for recognizing shapes or for segmenting image content, comparing images is only possible with considerable effort,[57] and all access systems have to make use of linguistic or numerical meta data.[58]

Measured against the ideal of the continuous flow of data, the images must therefore appear as a dead end road; as a kind of two-dimensional traffic jam in the n-dimensional data universe or as a 'surface' that seeks a compromise with the human eye. All this supports the thesis that the current hype surrounding digital images is actually a phenomenon of transition. Limited to an illustrative function,[59] the images remain appendages to the actual productive structures.

Or do the structures *need* a level of appearance? And do the images benefit from the fact that the structures at least overtax the human imagination in a specific way? So, what do the digital images refer back to? In basic computer graphics, it seems, to the virtuosity of the graphic designer, which would be a relatively boring resumption of pre-technical images. Secondly, to the state of software development, which can only be guessed at through the images; but always where it curiously takes 'realism' as a yardstick,[60] revealing an astonishing, once again mimetic dimension of the computer models;[61] and most importantly: The digital images refer to the play of the structures themselves. The fully synthetic techno-videos, which currently form the front line of clip aesthetics, stage the dance of data itself, complex rhythmic patterns and orders, the upheaval of orders and, exemplified in the Mandelbrot set, their border to chaos.

It becomes clear that the second general tendency of artistic modernism, abstraction, has now also flowed into technical images. Strangely blocked on the terrain of photography and film,[62] this upheaval has obviously had to wait for the computer, and conversely, in retrospect, it is now clear how far abstraction in the visual arts has anticipated the current media revolution.

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[57] The German Federal Criminal Police Office, for example, uses parallel computers to filter out portraits from video footage. (…1997!).

[58] The fact that image databases also organize their access not via images but via search terms, names and numbers is a matter of course that nevertheless deserves to be mentioned, as this changes the position of the images...

[59] A kind of flagship of this logic are image databases that are currently being set up in many museums; the WWW also contains a 'virtual museum' that makes a scanned set of Great Masters accessible around the globe in horrible repro quality. (…1997!).

[60] One of the main trends in current production is to recreate the movements of the human body, facial expressions or natural phenomena as deceptively as possible. This contradicts the thesis that digital images have no reference to the real world and indicates that the models – confronted with a leveled surface of infinite possibilities – are quite obviously looking for a scale.

[61] The concept of mimesis will play a role in the next chapter; even if imitation and resemblance are regarded as its core meaning, it is by no means limited to these.

[62] The 'Absolute film,' associated with names like Richter, Ruttmann, Eggeling and Fischinger, forms an exotic exception within a sea of representational images. If a film is not representational or only representational to a certain extent, it is automatically classified as an 'experiment.' And only advertising has occasionally made use of this type of aesthetic.

Digital images are, alongside the sound spaces of synthetic music, a way of finding intuitive access to the new universe; but as such they are a gateway, access, and not the accessible/inaccessible itself. As a surface, illustration and appeal, they undercut what they refer to; and the actual task remains, in a curious analogy to Plato, to think what appears in the appearances.

With Plato, it was the ideas (the signifieds) that knowledge had to seek out. In the case of computers, it is structures (to which the structures of the concrete programs are only a down payment). The fact that the two could have something to do with each other and that, despite their differences, a kind of common project between the divergent sign systems can be demonstrated is what is being asserted here.

In any case, the crisis of the signified has triggered the search movement that we call 'media history.' Just as the network metaphor bridges the abyss between language and computers,[63] the reservation against the signified and the horror of arbitrariness, the horror of social mediation and history, connect computers with technical images. And like these, the data universe also wants to be a 'speaking without language.'

The constancy of such motifs shows that it is not a completely new game that has been opened after all. If emphatic hopes are attached to every media innovation, and the discourse needs a relatively long time to evaluate the new medium, then this is always also a strategy of postponement, parallel to the narrative postponement of the individual texts. And just as there, the forward-pressing desire is only promised a temporary satisfaction. As clearly as it is possible to describe what drives it, it is just as impossible to name a goal.

And yet the movement does not end in a purely differential 'articulation;' it therefore makes sense, despite its metaphysical/teleological connotations, to insist on the concept of a 'search.' Like that of desire, it holds that the change is actually about something, about actual needs, actual difficulties of orientation, ultimately about misery/necessity, and not about a combinatorial game that takes place luxuriously above a secure basis. The difference between the two perspectives will become much clearer in the last section of my book. In any case, necessity seems to be a peculiarly constant feature of media changes.

[63] ...bridges the gap, not makes it irrelevant. (Note on translation: The network metaphor is the subject of the second chapter in 'Docuverse').

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