

## SIGNALS AND SYMBOLS

### A media-archaeological approach to "textuality"

[Extended version of a key-note lecture at the symposium *Post Script: After textuality / On media*, Yale University, March 29, 2012]

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### **Introduction: "Germanic" media studies - with and beyond Kittler**

This conference and its subject "after/text" is meant to open Literary Studies to the challenges of media theory. When it comes to German Studies in the narrower sense, we find outself in a peculiar situation: All of the sudden, German media studies which to a large degree originated from *Germanistik*, as incorporated and epitomized by the founding figure and discourse-creator of German technology-orientated *Medienwissenschaft*, late Friedrich Kittler.

On that occasion, let me pay respect to Kittler. As a media scholar - I am deeply *imprinted* by his intellectual legacy. "Imprinted" - that means, reading him, re-reading him, since - setting my personal acquaintance with Kittler apart - he primarily has been and will be present in a textual existence, not as a human body, but as a textual body (a *corpus*) of writings - either already published, or still waiting to be edited (his bequested papers). The name Kittler does not denominate an organic referent any more, but is restricted to its symbolical essence: as a string of characters, subject to its recombinant constructions, with no more possibility of his authoritative „veto“.

The realm of printed symbols is (in principle) immortal and timeless; coded messages can be copied (that is, since Gutenberg's metal letters, be reprinted) with a high degree of fidelity.

### **Textuality in the age of digital computation**

The age of digital textuality has even lead (and seduced) us text-

workers to the claim of "lossless" copies, like I could do when copying and pasting an illustration from the "Introduction" to Kittler's classic *Gramophone - Film - Typewriter* (Stanford UP 1999, p. 5) from a digital file of this book into my own digital text. What we see is the earliest known illustration of the printing press, and in this media-archaeological moment (not by coincidence) the dance of death appears.<sup>1</sup>

Not only has the printing press been the end (and not just the autumn) of the medieval age, but as well the skeleton stands for the voiceless consonants in the alphabet, the symbolic machine, whereby the missing flesh represents the absent vowels: phonocentric speech, the musicality of human articulation (which is exactly the poetic elements which an early Greek adaptor of the Phoenician alphabet wanted to preserve in writing when arbitrarily adding signs for vowels to the syllabic alphabet).<sup>2</sup> With the isolated consonant - cutting by noisy impulses into the streaming sound of harmonic vowels - a mechanistic element enters into writing, a machinic signifier.<sup>3</sup>

Within the thematic context of our symposium I want to present my focused version of *Gramophone - Film - Typewriter*, reading the title in a slightly different order, which is: to discuss the relation between signal-based and symbol-based (thus literally: techno-logical) media.

The early phonetic alphabet has been developed (literally „literally“) as a kind of gramo-phone but in fact remained type-writing, i. e.: writing in discreet characters = Greek *grammé*. Although this invites to a word play (early Greek writing as a pre-phonograph<sup>4</sup> recording of the spoken word), phonography is not "gramophone".

Alphabetic writing of the spoken word is not simply transformed but radically challenged by signal-based recording media like the mechanical phonograph which does not simply record the symbolic value of speech but the physical trace of the actual voice - all the difference between the elementarisation of speech by writing (Aristotle) and the recording of the sub-literal frequencies of actual *parole* (in terms of de Saussure for whom the early phonograph was a decisive tool giving birth to linguistic analysis).

At that point, let us categorically de-couple *writing* from *text*. While writing encompasses both analog and digital notation (like Adorno wrote about the „writing“ of the needle on grammophone record), textuality is a structural form<sup>5</sup>, a symbolic order which becomes medium only when it is biased by time.

## **"History" and different, non-textual shapes of time**

1 Fig.: Kittler 1999, p. 4: Illustration of "The oldest depiction of a print shop, 1499 - as a dance of death"

2 See Barry Powell, *Homer and the Origin of Writing*, Cambridge 1991; W. E. / Friedrich Kittler (eds.), *Der Ursprung des Vokalalphabets aus dem Geist der Musik*, Munich 2006

3 This "alphabetic edge" is emphasized by Anne Carson, *Eros. The Bittersweet* [\*1986], London (Dalkey Archive Press) 1998, 54

4 See Anthony Moore, xxx, in: Siegfried Zielinski / xxx Füllus (ed.), *Variantology* 4, xxx

5 Theodor W. Adorno, *Die Form der Schallplatte* [1934], in: ders., *Gesammelte Werke*, Bd. 19: *Musikalische Schriften VI*, Frankfurt/M. (Suhrkamp) 1984, 530-523

Let us differentiate between symbolic (textual) writing of time and actual signal-based time-writing. Historical discourse as the dominant conceptual shaping of emphatic time in occidental culture depends on its literary, textual, alphabet-based form called historiography.

Humanism itself has been bound to the textual tradition. What is frequently called "posthumanistic" by now, is very much a critique of historiographical textuality. Digital codes currently direct themselves against literary narratives with a new form of algorithmic, procedural thinking, to replace them with cybernetic movements of thought - "a sudden, allmost incomprehensible leap from one level to another."<sup>6</sup> Post-modern critique of narrative in historical discourse, (inspired by Hayden White's *Metahistory*<sup>7</sup>) has finally resulted in alternative ways of writing time-in-media. White has sharpened the analytical attention by an anamnetic reconsidering of so-called historiography. Telling is not just about stories, but about counting as well which is nowadays the writing mode of digital media but took place already in early Mediaeval forms of registering events. The Annalistic tradition as opposed to chronicles and historiography proper conveys a way of experiencing reality not in terms of continuous but in discrete time<sup>8</sup>, thus closer to state-based automata with discrete writing/reading of symbols on an endless memory tape (which is, of course, the diagram of the Turing Machine).

Historical disciplines are primarily text-based science, as opposed to a science of signals from the past which has opened a new field of memory research (not just as an additional source for historical inquiry). With photography and the phonograph an alternative agenda has been set. So-called Humanities (as defined by Wilhelm Dilthey) have not been concerned with the physically real - due to the limits of hermeneutics as text-oriented method, to the privileging of narrative as dominant form of representation and because of an essential lack of non-symbolic recording media. Battles have been described and interpreted, but the real noise and smell of a combat could not be transmitted until the arrival of the Edison phonograph.<sup>9</sup>

Historical studies predominantly remain a textual discipline, writing present texts on the basis of past texts.<sup>10</sup> In that tradition of textual closure, a core theorem of so-called "new historicism" in literary and cultural studies has been Louis Montrose's chiasmic correlation between „the historicity of texts and the textuality of history“.<sup>11</sup>

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6 Vilém Flusser, *Die Schrift. Hat Schreiben Zukunft?*, cited in Strohl, Introduction, in: Vilém Flusser, *Writings*, Minneapolis (University of Minnesota Press) 2002, xxxiii

7 Hayden White, *Metahistory. The historical imagination in nineteenth-century Europe*, London / Baltimore 1973

8 Hayden White, *The Value of Narrativity in the Representation of Reality*, in: *Critical Inquiry* vol. 7 no. 1 (autumn 1980), 5-27

9 See Bernhard Siegert, *Das Leben zählt nicht. Natur- und Geisteswissenschaften bei Dilthey aus medienschichtlicher Sicht*, in: Claus Pias (ed.), *Medien. Dreizehn Vorträge zur Medienkultur*, Weimar 1999, 161-182 (175), referring to: Wilhelm Dilthey, *Die Abgrenzung der Geisteswissenschaften. Zweite Fassung*, in: same author, *Gesammelte Schriften VII*, 311

10 As discussed during the symposium *Die Wirklichkeit der Geschichte*, University of Göttingen (Lichtenberg Kolleg), 17-19 November, 2011, section 4 ("Mediale Repräsentation und historische Wirklichkeit")

11 See W. E., xxx, in: Anselm Haverkamp / xxx (eds.), xxx

Immediately after Second World War, that is: in an époque "in which time has been torn into fragments"<sup>12</sup> (leading Deleuze to his diagnosis of the "Time Image" in post-war cinema), McLuhan's academic teacher Harold A. Innis published his collected essays *The Bias of Communication* (1951) where he confesses his philosophy of history as a kind of discreetly woven time-image: "It is assumed that history is not a seamless web but rather a web of which the warp and the woof are space and time woven in a very uneven fashion and producing distorted patterns" <Innis 1951/1995: xxvii>

### **Still textuality, but organized in non-linear ways**

One alternative to writing time symbolically in terms of history - that is, as narrative - is to take its record basis, the archive, at face value - to *write the archive* transitively, and not just historiography intransitively based upon the archival evidence. Against historiographical narrative, there is the „tectonics“ of the archive (an archivist *terminus technicus*) as pure textuality, and to pay *hommage* to the Yale Critics: Nothing is more deconstructive than the archive itself.

But it is media which help us liberate from the textual imprisonment of tempor(e)alities. From linear history (*via* cinematographic montage) to discrete media time:

Das Medienzeitalter, im Unterschied zur Geschichte - die es beendet - läuft ruckhaft wie Turings Papierband. Von der Remington über die Turing-Maschine zur Mikroelektronik, von der Mechanisierung über die Automatisierung zur Implementierung einer Schrift, die Ziffer und nicht Sinn ist - ein Jahrhundert hat genügt, um das uralte Speichermonopol von Schrift in eine Allmacht von Schaltkreisen zu überführen.<sup>13</sup>

Electronic circuitry is text under current.

### **What happens to text in the age of computer-based literacy?**

One welding point in wiring failing or "one bit wrong and the system crashes" <Swade a.a.O.> - as long as there is the appropriate hardware available at all to perform such software. "In archaeological terms the operational continuity of contemporary <"text"> culture cannot be assured" <209>.

The term "archaeography"<sup>14</sup> is meant to indicate alternative models of writing the being of texts in time. No emphatic narratives of media origins in the historic sense, but rather the indication of other levels of textual tempor(e)alities: their governing principles, their archaic essentials, their variabilities and invariances.

For a long interval of cultural states, there have been just

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12 Harold A. Innis, *The Bias of Communication*, Toronto / Buffalo / London (University of Toronto Press) [\*1951] 1995, "Preface", xxviii

13 Friedrich Kittler, *Grammophon - Film - Typewriter*, Berlin (Brinkmann & Bose) 1986, 33

14 See W. E., *Media Archaeography. Method and Machine versus History and Narrative of Media*, in: Erkki Huhtamo / Jussi Parikka (eds), *Media Archaeology. Approaches, Applications, and Implications*, Berkeley / Los Angeles / London (University of California Press) 2011, 239-255

symbolical, not physically real means of storing, ordering and administrating time. As opposed to physical signals, there were just alphabetic texts and musical scores. This textual time is mechanistic:

Both are based on a writing system whose time is (in Lacan's term) symbolic. Using projections and retrievals, this time memorizes itself-like a chain of chains. <...> whatever ran as time on a physical or (again in Lacan's terms) real level, blindly and unpredictably, could by no means be encoded. Therefore, all data flows, provided they really were streams of data, had to pass through the bottleneck of the <"textual"> signifier. Alphabetic monopoly, grammatology.<sup>15</sup>

But the media-archaeological sensor differentiates the signal-processing level of events from the symbol-processing level of time-writing (which of course reached its peak with the differential calculus - the mathematical, thus symbolical analysis of physical dynamics itself).

### **Cognitive history versus media-induced temporal affect**

Instead of a textually fixed analysis of temporal processes (and its extension to linguistic structures by structuralism), let us rather "sense" time - which is in fact related to signal recording since the age of the phonograph (rather than symbol-writing in printing culture).

A non-linear, in Foucault's sense discontinuous way of so-called historiography is close to cinematographical montage indeed. "If the film called history rewinds itself, it turns into an endless loop."<sup>16</sup> So the symbolic operations which are based on alphabetic letters (as developed by G. W. Leibniz to the historiographical fiction of *Apokatastasis panton*) can be applied to film as well.

Let me focus on such media temporality - below textuality, rather concentrating on the subliminal tempor(e)al affects induced by machines. Instead of film philology Walter Benjamin once described insight into the true nature of the past in terms of a cinematic frame which just for a fractal of a moment appears to the eye and to (subliminal) consciousness:

"Das wahre Bild der Vergangenheit *huscht* vorbei. Nur als Bild das auf Nimmerwiedersehen im Augenblick seiner Erkennbarkeit eben aufblitzt, ist die Vergangenheit festzuhalten." <vol. I, 695>

At first glance this analysis seems to refer to the material film frame which at the moment of projection indeed is being arrested for a fraction of a second in order to evoke the physiological after-image in the eyes of the audience. But by naming the temporality of lightning, in fact Benjamin already implicitly describes the aesthetics of the electronic television image (just emerging at his time) - a regime of electrified *Weltbilder*. In the most literal sense Adorno during his work at the Princeton Radio Research Project summed up this tele-presence („live“) under the title *Current of Radio*.

### **Not just different histories, but different from history: signal-**

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15 Friedrich Kittler: Gramophone - Film- Typewriter, Stanford UP 1999, Introduction, 4

16 Friedrich Kittler: Gramophone - Film- Typewriter, Stanford UP 1999, Introduction, 4

## based tempor(e)alities

All of the sudden, we find ourselves alienated from history and rather in signal-based chrono-spheres.

All those documents of and on an era, made accessible by lists, card-indexes, computer catalogues, together with material facilities such as tins, files, boxes and cupboards and all kinds of reading equipment, constitute a "time machine".<sup>17</sup>

- but only in a symbolic way. Only when signals instead of symbols become the basic operators (which is true for classical "analog" media technologies, ranging from telegraphy to radio and television), a different temporality takes place (as known from "live" transmission which is electro-physically authentic, even "indexically" true to physical time (in Thomas Levin's sense, as opposed to pre/calculated "real time" windows of presence). Signals are (electro-physically called) "time signals" in most cases, with *t* as the constant parameter). As opposed to mere written or printed characters, signals take place in time itself.

## Conflicting archival tempor(e)alities: Symbolic order versus indexical signal

As symbolic order (which according to Lacan always already implies the machinic<sup>18</sup>), archives are no time machines at all. They need external temporalization to generate a sense of history. While the traditional archive consisted of predominantly textual records providing a frozen spatial order which could only be transformed into "history" by the very act of historiography, the audio-visual records - when operated within machines - take place in time itself, different from the scriptural regime.

Audio-visual media address humans at the existential level of affective sensation of being which is the temporal sense. They re-generate temporal experience, thus addressing the human on the sensory (aisthetical, physiological) level as radically present, while mental cognition puts it into a "historical" context: here, a dissonance takes place, a gap opens - a *différent* in Jean-François Lyotard's sense (referring back to Kant).

As long as the archival records consist of strings of symbols (i. e. alphabetic writing), a cognitive distance - in spite of the auratic qualities of handwritten manuscripts or autographs - is more or less being kept, since an act of decoding has to take place which involves the cognitive apparatus. But once photography, the first medium in its modern sense, entered the archive, the sense-affective, presence-generating power<sup>19</sup> of signal-based media cuts short the distance (which is a prerequisite for *historical* analysis) in favor of mnemonic immediacy - the chrono-electric choque.

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17 Tjebbe van Tijen, We no longer collect the Carrier but the Information, interviewed by Geert Lovink, in: MediaMatic 8#1 <Jahr???

18 See Friedrich Kittler, [Ordnung des Symbolischen / Welt der Maschinen], in: same author, Draculas Vermächtnis. Technische Schriften, Leipzig (Reclam) 19xxx, xxx-xxx

19 See Hans Ulrich Gumbrecht, Production of Presence. What Meaning Cannot Convey, Stanford University Press 2004

## Chronopoetics of the sonosphere

Let me describe the "sound" of such a temporalized archive. For the electric age Marshall McLuhan identified a „culture without writing“<sup>20</sup> which he calls „acoustic space“. Against the immediate impression, this expression does not simply mean sound and music, but a specific form which he correlates with the electronic media sphere - the sphere of resonances. Thus a different kind of tempor(e)ality is introduced. „Music“ is both within and beyond textuality. As theory, music has been linked to mathematics since Pythagorean times; in that sense it is textually structured. As musical notation, sound becomes text. But as acoustic event, there is no symbols at work here.

„Media determine our situation“ is the famous *incipit* of Kittler's *Gramophone* book. When coupled to technical media interfaces, humans are being placed in a different temporal situation than normally experienced. In alliance with Günther Stern's (alias Günther Anders) unpublished habilitation from around 1930 *Philosophische Untersuchungen über die musikalische Situation* the question arises to what degree operative media („im Vollzug“) perform *ekstasis* of (or: from) historical time.<sup>21</sup>

McLuhan defined the (literally) „current“ state of media-induced communication as "acoustic space", since the ear perceives signals simultaneously (which indeed is the situation of electro-magnetic waves as well). Such signals are being processed in the right hemisphere of the brain, as opposed to the sequential processing of signals in the left hemisphere which has been privileged since the invention of the phonetic alphabet which turned processing of information from the ear (oral poetry) to the eye (writing / reading). The "after/textuality" (beyond the *Gutenberg Galaxy* as described by McLuhan 1962) leads to non-Euclidian space, to temporal synchronicity.<sup>22</sup>

What is called "Hörspiel" as an art form in German, the radio play, in the anglophone world is often called "radio drama"<sup>23</sup>. This is still oriented at the definition of drama as literary script and in a way logocentric (orientated at literature), as opposed to a radical different approach which is medium-centric (radio-*phonic*)<sup>24</sup> between the word-based radio play and the acoustic-based "Schallspiel" (Friedrich Knilli)<sup>25</sup> which dramatizes the materiality of radio transmission - a genuinely media-dramatic approach.<sup>26</sup>

## Re-discovering the sound of "texts": Oral poetry

While Florens Chladni was already experimenting with his

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20 See Herbert Marshall McLuhan, *Kultur ohne Schrift*, in: Martin Baltes / Fritz Böhler / Rainer Höltzschl / Jürgen Reuß (eds.), *Medien verstehen. Der McLuhan-Reader*, Mannheim 1997

21 Siehe Veit Erlmann, *Reason and Resonance. A History of Modern Aurality*, New York (Zone Books) 2010, 325f

22 See Tony Schwartz, *The Responsive Chord*, New York (Zone) 1974

23 See Tim Crook, *Radio Drama. Theory and Practice*, London / New York 1999

24 See Friedrich Knilli, *Das Hörspiel*, xxx

25 See Elke Huwiler, *Sound erzählt. Ansätze einer Narratologie der akustischen Kunst*, in: Harro Segeberg / Frank Schätzlein (eds.), *Sound. xxx*, Marburg (Schüren) 2003, 285-307

26 Klaus Schöning, *Zur Archäologie der Akustischen Kunst im Radio*, in: WDR (ed.), *Klangreise. Studio Akustische Kunst: 155 Werke 1968-1997*, Cologne 1997, 1-11

visualisations of acoustic wave figures in sand as created by the vibrations of the violin bow, „Goethe's definition of literature did not even have to mention <...> acoustic data flows“ <Kittler 1999: 7> which concern oral poetry. The practice of oral tradition has been silenced by the general textualisation and „only survived in written format; that is, under pretechnological but literary conditions. However, since it has become possible to record the epics of the last Homeric bards, who until recently were wandering through Serbia and Croatia, oral mnemotechnics or cultures have become reconstructible in a completely different way“, Kittler writes referring to Walter Ong's study on the technologizing of the word.<sup>27</sup>

This difference is dramatic: a change from symbolic to signal recording. „Even Homer's rosy-fingered Eos changes from a Goddess into a piece of chromium dioxide that was stored in the memory of the bard and could be combined with other pieces into whole epics.“ <Kittler 1999: 7>

The usual media-critical argument (since Plato's dialogue *Phaidros*) is that alphabetic recording kills the living memory culture of oral poetry by dead letters. At a recent conference organized by the Milman Parry Collection at Harvard University), one topic has been „The textualization of oral traditions“.<sup>28</sup> Has Parry's theory of formulae-based oral poetry itself been an effect of its analysis in a transcribed, thus: textual form - just like Aristotle gained his insight into the phonetic character of speech only after its literary elementarisation by the phonetic alphabet? The alphabetization of phonographically recorded oral poetry in philological studies (Homer studies, classics) lead to an oblivion of its essential nature which is sound. In a somewhat oxymoronic and at the same time significantly honest way, the name given by Albert Lord to the impressive archive of recorded oral poetry from the former South Yugoslav countries located at Harvard is "Milman Parry Collection of Oral Literature" by now. But media-archaeologically recognized, there is no text but recorded voices and sound, which only afterwards became transcribed into literature and musical notation (among others, by Bela Bartók). The signal-based recording of oral poetry operates not "beyond", but below textuality (both subliminal in the neuro-physiological sense and "sublimely" in the poetic sense). Memory in the age of electro-mathematical media has become transitory, more than ever known from so-called oral cultures. In analogy to Walter Ong's famous analysis, a kind of "second mem/orality" takes place.

### **Technically induced „secondary orality“**

The misunderstanding starts with mistaking oral poetry for literature. There is nothing "literal" in oral poetry, no letters,

<sup>27</sup> Kittler 1999: 7, referring to Walter Ong, *Orality and Literacy: The Technologizing of the Word*. London 1982, 27 „and (more reasonably) 3“

<sup>28</sup> *Singers and Tales in the 21st Century: The Legacies of Milman Parry and Albert Lord* (December 3-5, 2010), on occasion of the 50th anniversary of the publication of Albert Lord's seminal *Singer of Tales* and the 75th anniversary of the death of his mentor Milman Parry who has developed the Oral-Formulaic Theory)

no alphabet. The message of the medium is neuro-temporal (realtime poetics), not spatially literal.

The "musical" aspect of oral poetry performances lies not in its harmonic (melodic) but its rhythmic aspect - the chrono-poetic and time-critical aspect of prosodic articulation.<sup>29</sup>

Since the Edison phonograph, for the first time, the sound of language could not only be recorded symbolically (as by the phonetic alphabet) <see: Powell 1990>, but as a real audio signal. "We can't understand orality without consideration of sound", and the archaeology of sound at stake here is "closely connected to recording technologies that simultaneously <...> shape our sensory experiences of oral poetry".<sup>30</sup>

### **Textual dictation versus sound recording**

In order to subject (and open) cultural articulations like "oral poetry" to academic research, these speech and sound events first had to be symbolically or technologically recorded and archived in order to slow them down for careful and detailed analysis. Time axis manipulation ("slow motion") is the *a priori*, the condition for the scholarly analysis of time-critical processes which Edmund Husserl once called pro- and retention - which in terms of neuro science is the three-second time span ("window of presence") for a sung verse line (such as an ancient Homeric hexameter).

In listening to such a sound, we tend to be trapped by the referential illusion, believing that we are confronted with the audio signal. But in fact discrete bit-strings are being processed - sublime textuality, operating on the subliminal level of our understanding - an unexpected technical realization of what Gottfried Wilhelm Leibniz once described as unconscious ("nesciens") mathematical calculating perception (when listening, f. e., to breaking waves at the sea shore).

Let us not only ask what comes "beyond textuality" (this question belongs to the age of "analog" media), but as well: how textuality returns powerfully within technomathematical machines. The alphabet returns in a secondary writing, which is: the alphanumeric code - disguised as „secondary orality“:

A note to Ismail Kadare's novel *The File on H.* emphasizes: "In fact, part of the Milman Parry Collection of Oral Literature at Harvard has been digitized, and it is now possible to hear some of their field recordings *online!*"<sup>31</sup>

### **Retextualizing audio(visual) records: Digitized sound**

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29 See Wallace Chafe, *Discourse, Consciousness, and Time. The flow and displacement of conscious experience in speaking and writing*, Chicago 1994

30 Peter McMurray, *There Are No Oral Media? Aural and Visual Perceptions of South Slavic Epic Poetry*, typoskript of a talk given on occasion of the Milman Parry half-centennial conference at Harvard (see footnote above)

31 <http://www.amazon.com/File-H-Novel-Ismail-Kadare/dp/1559706279>; accessed September 22, 2006. The *online* address referred to is <http://www.chs.harvard.edu/mpc>

Active media archaeology (opto-digital reading of otherwise unaccessible sound recording) retrieves past sound signals by digital sampling and quantification. Thus, what appears to the ear like the restituted sound, is in fact the function of a mathematical matrix.

The digital *close reading* of sound dissolves any signal into discrete blocks. Thus the textual regime returns (in alphanumeric codes) - a new kind of archive.

Algorithmic archaeology is the return of textuality in the representation of the past, but this time, the text itself becomes media-active - a kind of operativity which the handwritten or printed text never knew.

Digitized signals at first sight resemble the tradition of music notation; they wait to be algorithmically executed.

### **Signal (instead of: textual) criticism: First audio recordings**

In common history of technology, the first melodic voice recording is supposed to be the children song "Mary had a little lamb" as performed by Thomas Alva Edison himself on his tin-foil phonograph in 1877.

But caution, *arché* (the core term in the notion of media archaeology) does not primarily denote a beginning in the history of technologies but rather a governing principle. Indeed the earliest sound recording has been preserved (in Johann Gustav Droysen's sense) as relic („Überrest"), as phonogram which was never intended to be re-played: Édouard-Léon Scott de Martinville's notational traces of acoustic vibrations produced by his "Phonautographe" on a rotating cylinder, produced for phonetic analysis. Only media-active, non-human archaeology, that is: with technologies themselves as archaeologist like the „virtual stylus" (or the „variable width" technology), opens this silent archive of sound in order to let it resonate again.

Not by coincidence, one of the earliest of these recordings which Scott deposited at the French Institut National de la Propriété Industriel in 1859 is a media-archaeological sound indeed, originating from a measuring tool: a tuning fork vibrating at 435 Hertz (at that time adopted as the official French reference pitch for musical performance):

It is a hybrid technology of sound re-synthetisation which made these oscillation curves vibrate again: optical scanning of acoustic signal lines (as known from sound film for ages). All of the sudden, once more a children song re-sonates: "Au clair de la lune, Pierrot répondit", 8. April 1860, Paris.<sup>32</sup> What looks like the pick-up of sound images by a "virtual digital gramophone needle"<sup>33</sup>, is indeed a registration of a new kind: digital, time-discrete sampling and mathematical quantization.

Only mathematized media technology can trace and re-veal such a

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32 *online* <http://www.firstsounds.org/sounds/1860-Scott-Au-Claire-de-la-Lune-09-08.mp3>

33 Harald Haack, Die erste Klangaufzeichnung. Eine Audiografie, *online*  
<http://newsbattery.blogspot.de/2008/05/07/die-erste-klangaufzeichnung-eine-audiografie>

sonic knowledge (*mathesis*) which leads to an extended notion of the text-critical method as known from the philological disciplines so far - towards a veritable signal critique which is no more exclusively performed by human scholars but as well (and even more) by the measuring media and their implemented algorithms themselves.<sup>34</sup>

Against the noise of physical decay, techno-logical, that is: „digital“ culture poses a negentropic insistence, a negation of decay and passing (away). Once digitized with an appropriate sampling rate, sound can be re-produced frequently with stable quality which was utopian in recent times of analog recording. The secret of this temporal unvulnerability is that it is just numbers which are electronically written; even after a thousand copies a physical representation of a zero stays zero and one probably remains one.<sup>35</sup>

All of the sudden, a non-literary texture, a binary pattern, saves the signal - the ultimate textual irony.

### **Beyond textuality = below textuality**

Donald F. McKenzie once defined "texts" as including verbal, visual, oral, and numeric data - be it in the form of maps, prints, and music, of archives of recorded sound, of film, videos, "and any computer-stored information [, everything in fact from epigraphy to the latest forms of discography]".<sup>36</sup>

But the extension of textuality to all forms of media existence blurs the difference between symbols and signals: on the electronic level all symbols, be it so-called "zero" or "one", is a physical signal <see Kirschenbaum 2008: 11f>.

### **The current state: digital retro-action**

Traditional physical storage media have been orientated towards literal inscription "by which the information to be stored is introduced into the device."<sup>37</sup> On the contrary storage devices based on latency (such as magnetic tape) only reveal their memory content in the dynamics of the electro-magnetic field itself: Memory by induction. Electrotechnical storage media take place in a sphere which is different from the scriptural regime of the classical archive. The archival regime, on the level of alphanumeric codes, rather unexpectedly returns in techno-mathematical machines - not as literary textuality though (narrative prose), but as command lines and matrixes (like bit-maps in hex-files), in short: as „operative symbolism“<sup>38</sup>.

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34 On forms of media-archaeologically augmented textual criticism see Matthew Kirschenbaum, *Mechanisms. New Media and the Forensic Imagination*, Cambridge, MA (The MIT Press) 2008

35 Rudolf Taschner, *Der Zahlen gigantische Schatten. Mathematik im Zeichen der Zeit*, Wiesbaden (Vieweg) 3. Aufl. 2005, Anm. 77

36 Donald F. McKenzie, *Bibliography and the Sociology of Texts*, London (The British Library) 1986, 5

37 Ira M. Sage, *Making Machines Remember*, in: *Product Engineering*, Bd. XXIV (April 1953), 141-149 (141)

38 A term introduced (in opposition to „ontological symbolism“) by Georg Trogemann, *Code und Material*, in: Trogemann (ed.) 2010: 15-26 (15)

This re-turn of the alphabet (a „Kehre“ in Heidegger's sense which probably is a direct derivative from skiing<sup>39</sup>) performs a recursive loop - a temporal figure which can not be reduced to the linearity of media history. Thus we are confronted with a media-archaeological re-actualisation, or better: contemporalization of what appeared like past but is presently at work in our computers. Computer culture "retro-actively" transforms past poetics into non-discursive, algorithmic configuration of events. Textual narrative loses its cultural power as the dominant time model.

That is why archaeology is needed, as a structural science opposed to historical narrative. The archaeological perception refers to what is actually there, *id est*: to what has remained from the past in the present - either as symbolical (archival) or as technical (media-archaeological layers, or more recently operatively embedded in micro-ship architectures - to be algorithmically (that is: dynamically) unfolded).

The notion of "digital retro-action" allows to look at the cultural past not by philosophically reducing it all to history, but more coldly, as an archival state of memory which is embedded within the present.

Here we capture the basic method of media archaeology which counts with re-configurations and feed-backs rather than with the imaginary supposition of continuous developments - a chrono-poetic mechanisms (as discovered for the human psychic apparatus by Sigmund Freud around 1900<sup>40</sup>) - closer to temporalities than to textual historicism.

### **Return of textuality: Integrated circuits and the alphanumeric code**

Circuitry as it is omnipresent in micro-processors today (both electro-technical and logical) is the new form of textuality.

Beyond signal-based recording media, we notify the return of the symbolic order.

But whereas letters and numbers in the catalogization of the world (Leibniz' "apokatastasis panton", Borges' "library of Babel") so far had not been able to perform algorithmic calculation itself, starting with Charles Babbage's Analytical Engine around 1830, physical materiality (hardware) itself became programmable.<sup>41</sup>

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39 „Der Richtungswechsel, den der Skifahrer vollzieht, führt dazu, daß er das, was zuvor in seinem Rücken lag, nun vor sich hat - und umgekehrt. Immerhin bleibt von dem, was nach der Kehre dem Blick entzogen ist, das Wissen erhalten“. Dieter Thomä, Kehre. Was wäre, wenn es sie nicht gäbe?, in: same author (ed.), Heidegger Handbuch. Leben - Werk - Wirkung, Stuttgart (Metzler) 2003, 134-141 (135). Thomä accentuates the necessity of „strenge Komplementarität zwischen 'Hinten' und 'Vorne', Verdecktem und Sichtbarem“ <ibid.> - well known from the figure/ground distinction in perception (Rubin).

40 "Nicht das Erlebte wird nachträglich umgearbeitet, sondern selektiv das, was in dem Augenblick, in dem es erlebt worden ist, nicht vollständig in einen Bedeutungszusammenhang integriert werden konnte": J. Laplanche / J.-P. Pontialis, Das Vokabular der Psychoanalyse, Frankfurt/M. (Suhrkamp) 1999, 313-317 (314)

41 See Friedrich Kittler, Hardware, das unbekannte Wesen, in: Lab. Jahrbuch für Kunst und Apparate 1996/97, edited by Kunsthochschule für Medien, Köln (Verlag Walther König) 1997, 348-363 (350), referring to: Anthony F. Hyman, Charles Babbage, 1791-1871. Philosopher, Mathematiker, Computerpionier, Stuttgart 1987

There has always been the symbol-induced desire (the language of the calculus) of textuality to transcend its read-only-character towards the algorithmic self-executing text.<sup>42</sup> But such a text has to be implemented in media-active matter in order to become processual, to happen in time ("drama"). No text, even the most symbolic machine<sup>43</sup> can be reduced to its symbols alone. It has to take place in the world, that is: in time. Only the electronics of a computer sets an implemented algorithm in being. Executability is not yet the real event which is depended on an operative technical medium in order to happen ("electronic literature") - just like the diagram becomes operative only in the mind of the interpreter (be it human or machine).

*After/text* in the sense of post-textuality is not just a new age, but rather invites for a dynamic reading: *Posting* texts, making them post-structurally unfold by processing, the algorithmic structure of source code when "run" within the computer.

Algorithmic ("electronic") literature unfolds not in a linear line-by-line way like on the printed page, but asks for interaction by the user/reader, offering non-linear hypertextual links, multi-media cross-modalities.<sup>44</sup> Thus the unfolding is in non-linear hypertextual time (hypertemporal dynamics) as opposed to the linear reading process: a virtuality like in a computer game which gets "instantiated"<sup>45</sup> - a term well known from object-orientated programming languages, signifying the generation of a concrete object out of a certain class. Which leads us to embodiment: "No text, after all, exists outside of an instantiation, and so all reading takes place in the physical, material world."<sup>46</sup> This is true the more on the media-archaeological level of such textual operations: computer code, asking for a different alphanumeric hermeneutics to accompany the philological hermeneutics of the surface textuality.

Cramer's thesis is that executability has always been essential to poetry; thus poetic algorithms just extend this formal dimension. "Dies steht jeder Ableitung von Computerpoesie aus 'neuen Medien' diametral entgegen. So kommt diese Arbeit methodisch <...> ohne Medientheorie und ohne die Begriffe 'Medium' und 'Medien' aus" <Cramer 2011: 13>. But this *always already* - which explicitly differentiates itself from the media-archaeological discourse analysis<sup>47</sup> - dissimulated the media-epistemic discontinuity between alphabetic text and algorithmic computing.

Classical textuality as a cultural form ("literature") always lacked the operative dimension which differentiates technological media from cultural engineering: neither the handwritten nor the

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42 See Florian Cramer, *Execut[up]able statements. Poetische Kalküle und Phantasmen des selbstausführenden Texts*, Munich (Fink) 2011

43 See Sybille Krämer, *Symbolische Maschinen*, Darmstadt (Wissenschaftliche Buchgesellschaft) 1988

44 See Lars Saetere et al. (eds.), *Exploring Textual Action*, Aarhus (Aarhus UP) 2010

45 A term used by Patricia Tomaszek in her paper "Materiality in Electronic Literature. Paratexts and Navigable Spaces", on occasion of the Paris seminar *Materiality and Historicity*, 25-27 January 2012, at the French-Norwegian Center at Maison de Science de l'Homme

46 Johanna Duncker, review of: Matthew Kirschenbaum, *Mechanisms. New Media and the Forensic Imagination*, Cambridge, MA (MIT Press) 2008, in: <http://digitalhumanities.org/dhq/vol/3/2/000048/000048.html>

47 "Auch geht es ihr <sc. dieser Arbeit> nicht um eine 'medienarchäologische' Technikdiskursgeschichte, wie sie Bernhard J. Dotzler und Stefan Rieger für Schrift und Maschinenrechnungen sowohl der Frühneuzeit, also auch der Moderne geschrieben haben": Cramer 2011: 12, referring (among others) to: Bernhard J. Dotzler, *Papiermaschinen*, Berlin 1996

printed text could ever execute itself but depends upon the human reader to process the linear succession of characters into meaningful statements.

But with the Turing Machine the reading mechanism is as well the writing mechanism which on the basis of pre-formulated symbolic tables performs operations not upon the traditional page format any more but upon paper reduced to one dimension, the endless tape. But a second dimension comes into play: time.

The traditional archive (in the proper usage of the term) belongs to the symbolic order and is bound to the alphabetic writing regime. As an extension of administrative memory, it rather belongs to cultural engineering (a *Kulturtechnik*) than to advanced automated media technologies.

If the term archive is (somewhat inappropriately) extended to collections of documents based on signals rather than symbols, we are dealing with the classic "analogue" storage media like photography, the phonograph and cinematography, and magnetic tape storing immaterial charges for processing audiovisual signals in electronic form.

But in a kind of trick of reason ("List der Vernunft", according to Hegel) - which in ancient Greek language is another meaning of *mechané* -, we finally realize the extension (or rather re-turn) of the symbolic regime in new forms, that is: the alphanumeric code. Programming in Assembler code is textuality close to the machine.

While Marshall McLuhan still opposed the phonetic alphabet and the printing press (the *Gutenberg Galaxy*) to the age of electronic (analogue) media, within the electronic computer, the alphabet returns in a kind of second order - a re-entry. This folding (*Falte*) or is not a historical figure of time but rather a form of recursion.<sup>48</sup>

Within the computer, code becomes a pre-text, hidden behind the visual interface. The alphanumeric code is absconding from the computer screen (as frequently emphasized by the media philosopher Vilém Flusser). If there is still (a lot) of text to be seen on the monitor, it is textuality of a second order, the re-entry of the alphanumeric code (in fact: arrays of bits) in its literal formation which is rather a mathematical matrix (just like digital images as well).

### **Re-turn to Foucault (with Kittler)**

Let us return to the beginning, to Friedrich Kittler's move beyond Foucault's textualism.

Kittler once criticised Foucault for having been imprisoned within the regime of writing - texts and libraries. „It is for this reason that all his analyses end immediately before that point in time at which other media penetrated the library's stacks. Discourse analysis cannot be applied to sound archives or towers of film rolls" <= Kittler 1999: 5>.

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48 See Ana Ofak / Philipp v. Hilgers (eds.), *Rekursionen.. Von Faltungen des Wissens*, München (Fink) 2010

The audio-visual area can be analysed by discourse analysis as long as it is an imagined effect of literature; the literature of Romanticism which aimed at auditory hallucinations and visual „imagination“ as effected by the medium of alphabetic writing itself. That aesthetic strategy ended when what has been imagined sensations (imagination) so far, became apparatus-induced physiological perception (*aisthesis*) with photography, phonography and cinematography soon.

Media archaeology offers a non-historical interpretation of this process: no ending (and replacement) of the Gutenberg Galaxy with signal-based analog media, but rather a de-placement of modalities, „Umschichtung“ rather than „Geschichte“.

As has been already remarked by McLuhan and re-stated by Kittler: New media do not simply replace old media but re-locate them <Kittler 1993a: 178>.<sup>49</sup>

Kittler himself now figures not just in texts any more, but as well in audio and video files, accessible *online* in the World Wide Web.<sup>50</sup> This kind of presence (*ir/reale Gegenwart*) is not simply ghostly / uncanny in the double-sense of „medium“.

In sound and vido files, Kittler's voice and image do not return as the analogue, signal-based alternative to the symbolic code of textuality, but itself in a recursive re-turn of the alphabetic code, now extended and reduced to the alphanumeric code of hex-files („secondary alphabet“) or even numeric (the binary bit-level). A dialectic figure: texts (thesis) - sound/images as signals (anti-thesis), now sublated into the alphanumeric code (synthesis).

Just as Mark B. N. Hansen in his *New Philosophy of New Media* points out: Below cultural semantics (the iconology of images), "the digital image is an aggregate of quasi-autonomous, independently adressable, numerical fragments."<sup>51</sup>

Audio-visual Kittler thus re-appears as „text“ again - as an algorithmically moved text, though. This re-turn can not be told in the form of history, since - as expressed by George Steiner in his essay on *Real presence* - the "narrative" of a formal algorithms differs fundamentally from discursive story-telling.<sup>52</sup>

Humans almost irresistably interface to images in an iconologic way and to texts in a hermeneutic way. But there is a kind of knowledge instead which can be uncovered from within the visual, acoustic or textual endo-data: entering the digitized record itself (data-immersion), which is the media-archaeological gaze that can be performed by algorithmic machines of information processing better than by human perception. Such *informatized* organization of knowledge generates diagrams (which is as well the Deleuzean intepretation of the Foucaultdean *archive*).

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49 See Stefan Rieger, entry „Medienwissenschaft / Literaturwissenschaft“, in: xxx (ed.), *Handbuch ???*, 411. Siehe auch Andrew Piper, *Dreaming in Books*

50 See <http://filmtagebuch.blogspot.de/stories/1914671> = Thomas Groh's blog

51 Kjetel Jakobsen, *Anarchival Society*, in: Eivind Rossaak (ed.), *The Archive in Motion*, Oslo (Novus) 2010, xxx

52 „Das 'Narrative' eines formalen Algorithmus ist nicht das eines diskursiven Erzählens.“ George Steiner, *Von realer Gegenwart. Hat unser Sprechen Inhalt?*, Munich 1990, 155

When Kittler called Foucault „the last historian or first archeologist“ <Kittler 1999: 5, as quoted above>, he referred to Foucault's „suspicion that all power emanates from and returns to archives“ <Kittler 1999: 5>. Foucault himself restricted his brilliant discourse analysis to the realms of law, medicine, and theology - which remains within the domain of classical textuality: „ A tautology of history, or its calvary“ <Kittler ibid.>. But if we (symbolically) open up the computer (which is: looking at his symbol-operative level), Foucault's suspicion can be re-affirmed in a new way: All power emanates from and returns to the techno-mathematical *archive*.

### **The trans-textual archive**

From this new options of searching the new kinds of archive emerge which are not simply alphabet-based any more but signal-based like phonographic records or the electronic video image on magnetic tape.

Once being digitized, the electronic image is open to almost real time access and new search options like similarity-based image retrieval. The traditional architecture of the archive is based on classificating records by inventories. This is being replaced in the digital media by order from fluctuation, that is: stochastic dynamics. But this is an "archive" no more, but algorithmically ruled processuality.

Navigating sound and images on the borderline of digital addressability: It is possible to navigate through large amounts of audiovisual data beyond verbal language, an immediate access to sound and images, unfiltered by words. Images and sounds thus become calculable and capable of being subjected to pattern-recognition algorithms. Such procedures will not only media-archaeologically "excavate" but as well *generate* unexpected optical statements and perspectives from an audio-visual archive that can, for the first time, organize itself not just according to meta-data but according to its proper criteria - visual memory in its own medium (endogenic). The notion of „excavating the archive“ in terms of media-archaeology (instead of iconography) is not meant to be a metaphor.<sup>53</sup> What is being digitally „excavated“ by the computer is a genuinely code-mediated gaze on a well-defined number of information patterns which human perception calls "sound" or "images". Contrary to traditional semantic research in the history of ideas, such an audio-visual archive will no longer just list sound & image sequences according to their authors, subject, and time and space metadata of recording. Instead, digital data banks will allow audio-visual sequences to be systematized according to genuinely signal-parametric notions (mediatic rather than narrative *topoi*), revealing new insights into their informative qualities and aesthetics.

Historiography has moved post-script; the archive remains - as text.

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53 For Michel Foucault, the term archaeology explicitly "does not relate analysis to a geological excavation": Foucault 1972: 129