

PRINTED LETTERS, ACOUSTIC SPACE, REAL TIME INTERNET

The message of current communication media, deciphered with (and beyond) McLuhan

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Although Marshall McLuhan is currently being re-discovered as a thinker of "social media" *avant la lettre*, a kind of prophet of the open source movement within the Internet community, the main lesson to take from McLuhan is still to look behind the computer screens, for a not content-orientated, but hidden message-orientated analysis. This requires - with and beyond McLuhan - a structural analysis of the techno-mathematical conditions of current media practices, to bring out the epistemological layers of such practices.

The message beyond McLuhan's grave is a critical awareness for media-induced phenomena acting upon humans in implicit ways. McLuhan has inspired neurological studies into mass media perception, that is: the awareness of subliminal processes induced by technical (mechanical and electronic) media such as later experimented by Herbert E. Krugmann's "Brain Wave Measures of Media Involvement"¹. McLuhan's seminal book *Understanding Media* originally did not result out of interest in media-epistemological theory right away, but originated more traditionally in communication studies. *Understanding Media* had been commissioned as an educational report to analyze the impact of watching television on school children. It was "absolutely McLuhan" to turn this study upside down, resulting in a most original analysis of the deep impact of media on human perception on the subliminal level. Understanding media is not about content, but the *message* and *massage* of the medium: the affective, neurological level, analogous to the figure/ground separation as developed in *Gestalt* psychology.

Early 20th century artistic avantgardes have been triggered by media technologies such as chronophotography and film. As has been pointed out by Clement Greenberg in his writings on art (and later by Michel Foucault in his interpretation of Manet), modernist painting itself has discovered the grounding materiality of the rectangular canvas as the principal message. According to McLuhan who developed this insight further, it is the media-archaeological task of the artist to un-cover such a ground (like according to Martin Heidegger it is the philosopher's task to reveal forgotten ontological substrata), and to communicate these insights in anticipation of what only belatedly becomes apparent to society.

¹ Published in: *Journal of Advertising Research* vol. 2, no 1 (February) 1971, 3-9

McLuhan's insistence on the ground/figure difference can be interpreted as the difference between the media-archaeological layering of media against their phenomenological (mass) media appearance on the level of interfaces and other surfaces.² This can be extended into the temporal domain, where frequency is the mathematical reversal of physical oscillations. High frequency carriers channels in tele-communication are being modulated by the varying low frequency articulations known to human perception as sound, music or speech, figuring or in-forming the basically *temporal* ground of transmission. Media archaeology is not only about spatial and topological grounds, but as well about the floating groundings: "Ground cannot be dealt with conceptually or abstractly: it is ceaselessly changing, dynamic, discontinuous and heterogeneous, a mosaic of intervals and contours."³

Having said this, though, McLuhan's focus on the message of the medium *as perceived by human senses* lacks an essential understanding of the inner processes in telecommunication technologies for the second half of the 20th century and since, which is based upon the technomathematical theory of information as developed by Claude Shannon 1948 in his "Mathematical Theory of Communication". McLuhan's critical, almost satirical reading of the Shannon diagram as a simple linear sender/receiver-relation reveals his essential ignorance of the mathematical reasoning involved in digital communication engineering; this makes all the difference between an analysis of the impact of mass media on audiences on the one side, and media archaeology on the other.

McLuhans critical comment on Shannon's communication diagram is a disastrous simplification of its mathematical understanding. In his 1978 essay "The Brain and the Media. The 'Western' Hemisphere", McLuhan attributes the Shannon-Weaver model of communication to the predominantly left-hemispheric Gutenberg galaxy.⁴

"The Shannon-Weaver model of communication <...> typifies left-brain lineal bias. It is a kind of pipeline model of a hardware container for software content. It <...> assumes that communication is a kind of literal *matching* rather than resonant *making*" <Marshall McLuhan / Eric McLuhan 1988: 86>

- which reveals McLuhan's kind of "analogue thinking" from the electronic media age (thus being closer to the analogue computer indeed), as expressed by a follower of McLuhan, the radio scholar Tony Schwartz:

Electronic media have been viewed merely as extensions of print, and therefore subject to the same grammar <...>. The patterned auditory and visual information on television or radio is not "content". Content is a print term <...> As stimuli, electronically mediated communication cannot be analyzed in the same way as print "content".⁵

Can such an interpretation of electronic mass media still be applied to the mathematical theory which rules our digital communication media? McLuhan's intellectual ally Schwartz continues:

The function of a communicator is to achieve a state of resonance with the person receiving visual and auditory stimuli

² Interfaces, though, may be treated different from traditional surfaces, since they represent a technical coupling.

³ McLuhan, Marshall/McLuhan, Eric (1988): *Laws of media. The new science*, Toronto, University of Toronto Press, hier: S. S. 63.

⁴ McLuhan 1978: 11, as quoted in: Peter Bexte, Cadillac und Gebetmatte. McLuhans TV-Gemälde, in: De Kerckhove et al. (Hg.) 2008, 323-337 (335)

⁵ Tony Swartz, *The Responsive Chord*, New York 1974, 19

from television, radio, records, etc. Decoding symbolic forms such as <...> written words is no longer our most significant problem. They extract meaning from perception in a manner prescribed by the structure of the language, code this meaning symbolically, and store it in the brain. But the brain does not store everything in this way. Many of our experiences with electronic media are recorded and stored in the same way that they are perceived. <...> since the experience is not stored in a symbolic form, it cannot be retrieved by symbolic cues. <Schwartz 1974: 24>

But it is an almost Hegelean irony of technological reason in the history of cultural engineering, that what looks like non-symbolic (and rather signal-based) audiovisual media, in the epoqe of digital communication re-returns in an even more rigid symbolic order. The implicit message of the meta-medium computer is that all former media (especially the signal-based ones) are symbolically transformed from distinct hardware to software, thus: software formats.⁶

A first step in symbolic coding had been spoken language, then writing (especially the phonetic alphabet); these cultural technologies have since been more or less immediate to the human processor. Nowadays though, the alphanumeric programs remain hidden to most users.

Understanding Media in the age of Internet

In order to understand media in the age of the Internet, let us focus on its time-critical aspects which are the message of Internet-based communication (especially in the form of so-called Web2).

McLuhan is not just a historical hero of media theories. As for the Internet and mobile media, it is still useful to follow McLuhan's advice not to ask about the content and its social implications only but to look equally at the subliminal message or rather message which is thereby being induced.

McLuhan analysed the cultural impact of media not on the level of semantic content like communication studies, but rather directed attention to their *sublime*, non-figurative message (in the sense of Immanuel Kant and Edward Burke), that is: the ways media act upon and reshape the perceptual schemata within humans. As such, media power operates by "amplifying human sensory preceptors"⁷ in their different physiological channels. Among these, the amplification of temporal schemata reigns supreme. But this amplification leads to irritations. Walter Benjamin in his 1936 essay on the work of art in the age of technical reproduction insisted that aesthetic "aura" depends on real presence in space and time. Nevertheless, electronic television by means of *live* transmission is able to generate an impression of presence by real signal synchronicity in time across spatial distance. At the same time, human senses have difficulties to differentiate *live* from broadcasting of *live from tape* or (nowadays) digital transmission in *real time*:

One can no longer distinguish, visually or aurally, between that which is reproduced and its reproduction <...> not even

⁶ See Stefan Heidenreich, FlipFlop. Digitale Datenströme und die Kultur des 21. Jahrhunderts, Munich / Vienna (Hanser) 2004

⁷ Robert Babe, McLuhan and the Electronic Archives, in: Old Messengers, New Media. The Legacy of Innis and McLuhan, Essays: Archives as Medium, *online* <http://www.collectionscanada.gc.ca/innis-mcluhan/002033-4010-e.html> (Zugriff: 29. April 2009)

discern *that* or *when* reproduction or repetition, in the manifest sense of recording or replaying, is taking place. We must be informed whether or not what we are seeing is "live". <...> we cannot distinguish through our senses alone between what we take to be simply "alive" and what as reproduction, separated from its origin, is structurally posthumous.⁸

Samuel Weber discovers for live media what Jacques Derrida once called the "iterability" of the mark.

The liveness of media springs from their temporal effects. In a McLuhanite reading, the essential message of electronic communication transfer is in its temporal field. The previous technical media of storing physical events (photography, phonography, cinematography) have been counter-balanced by media of pure transfer in the 20th century. Prominently ranging among these has been radio based on the electronic vacuum tube and its functional successor (though irreplaceable in the case of the TV monitor tube!), the transistor. The thermionic tube has been the defining element of electronics as such. McLuhan neglected this decisive media-archaeological artefact, remaining a philologist rather than an engineer, thus being media scholar only half way. That is how he can write of "electricity" as the paradigmatic energy form of the present, whereas electronics does not simply mean electric energy but the directability, almost governance (both analogue and logical) of free-floating electrons in vacuum space with almost light speed, thus allowing for low-currenty based information engineering.

The characteristic of early radio has been that it transferred music and speech without storing sound at all (electro-magnetic waves "store" signals only as a relativistic effect). From that derives a general phenomenologic insight: Analog mass media like radio and television exist always only momentarily in the "now". Being located in time itself. In that sense, radio is a "hot" medium.⁹ McLuhan's differentiation between "hot" and "cold" media can be applied to the technical modes of generating temporal affects indeed, ranging between intensive and extensive temporal involvement of the participant. The "live" effect of technical communication takes place since the age of the telephone (whereas telegraphy, intermediated by the inscription paper of dashes and dots, rather represented what we now call differential "live on tape").

Such a time-critically sharpened reading of McLuhan's medium/message theorem leads to new ways of approaching the temporal bias of technical media which is not only a macro-temporal *bias of communication* in a Harold Innis-mode of media theory, "but an intensive microtemporality."¹⁰

In a very different way, the temporal message of digital communication media is in temporal deferral: from *live on tape* to media content *on demand*. This is the temporal signature of webcasting.¹¹ This time-critical sovereignty and immediacy in

⁸ Samuel Weber, *Mass Mediauras. Form, Technics, Media*, Stanford (Stanford UP) 1996, 121

⁹ Wolfgang Hagen, *Theorien des Radios. Ästhetik und Äther*, *online* unter: www.whagen.de/seminare/AETHER/aether3.htm

¹⁰ See Jussi Parikka, *Operative Media Archaeology*. Wolfgang Ernst's Materialist Media Diagrammatics, in: *Theory Culture & Society* (forthcoming)

¹¹ Andreas Bade, *Radio im Internet. Zwei Wege für die "Stimme" im Netz* (= Kapitel 3), in: ders., *Das Internet als programmbegleitendes Medium des Hörfunks. Historische Entwicklung von Internet, Radio und ihrer Medientheorien*, Hamburg (Diplomica Verlag) 2009, 57-86, hier zitiert nach der online-Veröffentlichung unter <http://www.mediaculture-online.de>

access means a "tactilization" of what has been non-individual mass media broadcasting before, in fact: an almost *haptic* access to media time (to use one of McLuhan's terms. Something disappears at the same time: the clear distinction between what is present and what is past, what is transmitted "live" and what comes out of the archive. Some online-services of radio or TV channels offer access to commentaries on current news, while at the same time offering access to other commentaries on previous occasions. The delineations of the archive to the present become diffuse, almost fuzzy.

Technical *Eigenzeit* (the temporal logic inherent to media) shapes the collective perception of time; time itself loses its individual character. The study of time challenges media studies.¹² Here is the message of Internet-based communication: The dominant communication platform of today, the World Wide Web, needs to be analysed on its operative level of temporal processualities and eventualities.

Communication networks are not just topological systems being expressed by hypertextual links, but as well time-critical processes. A symptom of this is a term which does not nominate a new medium but declares the temporal mode its decisive media-theoretical criterium: the *real-time web* which is "a set of technologies and practices which enable users to receive information as soon as it is published <...>, rather than requiring that they or their software check a source periodically for updates."¹³ The communicative practice of *instant messaging* belongs to this temporal field; in McLuhan's sense the message of the medium here is immediacy serving to create the illusion of a pseudo-copresence. This recent form of web economy is being defined by communication within the time-critical realm; cyberspace as *docuverse* is being replaced by an extremely accelerated information processing in cybertime.¹⁴ The Internet thus turns out not to be just a topological extension of a generalized archive, but equally as a chrono-technical "compression of time" <ibid.>. This requires a close look at time-critical operations on the physical and logistical level of the Internet, f. e. the "Ping" signal. In the Internet, each data packet into which a document has been sliced is being observed individually; its transfer happens independent from its preceding or successive packages. This procedure is radically time-critical since it takes place within the so-called Time To Live-field which defines the maximal temporal duration in seconds an IP packet is allowed to exist in the Internet. A counter is progressively being reduced during this routing; in case the TTL-counter reaches zero before the packet has reached its destination, it is being annihilated.¹⁵ Media time is not endless.

"Communication", in this sense, is about time-sharing (not primarily about exchange of meaning) - just like in physics, engineering and systems theory "communication" is about signal interaction first. This reminds of a primary scene in media

¹² "Zeit ist damit auch die Herausforderung einer Medienwissenschaft": Stefan Rieger, *Kybernetische Anthropologie. Eine Geschichte der Virtualität*, Frankfurt/M. (Suhrkamp) 2003, 143

¹³ http://en.wikipedia.org/wiki/Real-time_web (Stand: 20. Januar 2010)

¹⁴ "Früher ging es um die Schaffung von Räumen <...>, heute geht es um die Zeit selbst, um Chronos, um die Kunst der *longue durée*": Geert Lovink, Was uns wirklich krank macht, in: *Frankfurter Allgemeine Zeitung* No 140, 21st June 2010, 27 (referring to the media theory of Franco Bernardi)

¹⁵ Othmar Kyas, *Internet: Zugang, Utilities, Nutzung*, Bergheim (DATACOM) 1994, 65

archaeology, the *momentum* of telegraphy, when one of the first messages exchanged on the Morse system in the United States between Baltimore and Washington was a quest for time - with the response indicating local time in almost immediate speed, (almost) without delay.¹⁶ The message of telegraphy in its early, that is: media-archaeological phase, is (about) tempor(e)alities - coupling (synchronizing) sender and receiver in the time domain which is, in McLuhan's sense, the tactile temporal affect. What has still been verbal time-communication between human operators on the telegraphic channel, later became the technical time signal, with the temporal signal as low frequency modulation of a high frequency signal itself being the message and not *allegorically* carrying another meaning.

The "acoustic" structure of electronic media

Notwithstanding his confusing electricity and electronics, McLuhan made a crucial discovery. In a letter to P. F. Strawson, author of *Individuals. An Essay in Descriptive Metaphysics* (1959), McLuhan quotes from that work: "Sounds, of course, have temporal relations to each other ... but they have no intrinsic spatial characters."¹⁷

The immediacy of electricity has been valued essential by McLuhan as the definite difference to the Gutenberg world of scriptural and printed information:

Visual man is the most extreme case of abstractionism because he has separated his visual faculty from the other senses <...>. <...> today it is threatened, not by any single factors such as television or radio, but by the electric speed of information movement in general. Electric speed is approximately the speed of light, and this constitutes an information environment that has basically an acoustic *structure*.¹⁸

Very media-archaeologically, McLuhan's term "acoustic structure" evidently refers to an epistemological ground, not to the acoustic figure (what ears can hear). This ground-breaking took place with the collapse of Euclidian space into Riemann spaces and culminates around 1900 with quantum physical notions (the para-sonic wave/particle dualism, up to the "superstring" theory of today) on the one side, and Henri Bergson's dynamic idea of matter as image in the sense of vibrating waves and frequencies.¹⁹ McLuhan's "acoustic space" is oscillating time and implicitly re-returns in Gilles Deleuze's "interval" philosophy.

In an epistemological sense, the sonic is not about (or limited to) the audible at all, but a mode of revealing modalities of temporal processuality.

At the speed of light, information is simultaneous from all directions and this is the structure of the act of *hearing*, i. e. the *message* or effect of electric information is acoustic" <McLuhan *ibid.*> - even when it is perceived as an electronic image, as defined by the video artist Bill Viola in his essay "The

¹⁶ The topic of Florian Sprenger's talk "'Intellect hath conquered time' - The Presence of Electricity and the Rise of Telegraphy" at the conference *Global Communication Electric. Social, Cultural, and Political Aspects of Telegraphy*, 18/19 February 2001, Museum of Communication, Berlin

¹⁷ Dated April 17, 1969. Letters of Marshall McLuhan, selected and edited by Matie Molinaro / Corinne McLuhan / William Toye, Toronto / Oxford / New York (Oxford University Press) 1987, 367

¹⁸ Letter to Barbara Ward, 9 February, 1973. McLuhan 1987: 466

¹⁹ Henri Bergson, *Matière et Mémoire*, Paris 1898 <???

Sound of One Line Scanning".²⁰

The temporal *punctum* becomes decisive: "The *interval* is where the action *is*" <McLuhan *ibid.*>; unwillingly, McLuhan here grasps the essence of binary data processing - the "time of non-reality" (as defined by Norbert Wiener) in switching between Zero and One.

In this aspect, McLuhan at first sight mis-interpreted electronics once more: by understanding the computer as a mere extension of electronics. The point is that the computer conceptually is not dependent on electricity at all but basically a trans-machinic medium, a "paper machine" (in terms Alan Turing). Computer culture as it actually takes place is time-critically bound to electric speed indeed.

"Tetrads": Alternative media historiograms

Marshall McLuhan and his son Eric figure as co-authors of a final work which claims an encompassing theory of media (in) time: *Laws of Media*.²¹ The sub-titel of this work ("The New Science") explicitly refers to Giambattista Vico's model of recurrent states in cultural history; for media history, McLuhan calls them "tetrads".

Somewhat in the tradition of philosophical phenomenology, McLuhan's tetrads are meant to direct attention to the hidden or unnotified qualities of technologies in culture - literally media archaeology.

With all his sometimes stupifying imprecisions in media analysis, McLuhan had a stunning sense for alternatives to media historiography as simple history of technologies or cultural history. These alternatives do not result from distant reflection only but from media themselves.

"Just as linear history begins with writing, it ends with TV."²² In the 1954 version of Marshall McLuhan's pamphlet *Counterblast* the "Media Log" is explicit: "Sigfried Giedion has had to invent the concept of an 'anonymous history' in order to write an account of the new technological culture."²³ In another version of the pamphlet McLuhan declares: "Just as there was no history when there was no linear time sense, so there is post-history now when everything that ever was in the world becomes simultaneously present to our consciousness" <McLuhan 1969: 122>.

Illustrative of this is oscillating state (though here paradoxically taking place in a static spatial image form) is the mural painting in McLuhan's seminar room at Toronto university

²⁰ Bill Viola, *The Sound of One Line Scanning*, in: Dan Lander / Micah Lexier (Hg.), *Sound by Artists*, Toronto / Banff (Art Metropole & Walter Phillips Gallery), 1990, 39-54

²¹ Marshall McLuhan / Eric McLuhan, *Laws of Media. The New Science*, Toronto / Buffalo / London (Univ. of Toronto Press) 1988

²² Marshall McLuhan, *Counterblast*, New York (Harcourt, Brace & World) 1969, 122, as quoted in Bexte 2008: 332. This diagnosis has been shared by the media philosophy of Vilém Flusser in his writings on writing and on the nature of the technical image.

²³ Recently published on occasion of the media arts festival *transmediale.11* in Berlin (in cooperation with Gingko Press) in 2011

campus: René Cera, *Pied Pipers All* (1969).²⁴

Since the dominant mass medium of his age, television, has been McLuhan's research-guiding medium, it is from the time-critical nature of the electronic image that McLuhan derives his insight into the radically temporal message of high-technological media:

You are drawn into that tube, as an inner trip. You're totally involved. You have no objectivity, no distance. And it is acoustic. It resonates. But this is a hidden ground, because superficially people think they're looking at a visual program. And they're not. They're not looking at all - they're absorbed, involved in a resonating experience.²⁵

But today, such formerly "acoustic" TV images consist of digital pixels (different from the cathode ray "mosaic" of the iconoscope as referred to in McLuhan's times).

In terms of analyzing current computer-based media culture, McLuhan's electricity-centered approach seems antiquated. But when it comes to apply his critique of technical communication to the re-thinking of media history, the replacement of scriptural linearity by "sonic" resonance becomes productive. "Resonance" is McLuhan's central figure of dynamic temporality taking place in acoustic space which is "organic and integral, perceived through the simultaneous interplay of all the senses", a kind of "echoland"²⁶ - sonic time rather than history.

Electromagnetic signals are capable to evoke almost immediate effects in a resonant receiving system. Resonance compares to the dynamic tempor(e)ality of the electro-magnetic field rather than to the monodimensional transmission in a linear channel.²⁷ Such interpretations of electronic communication which intermediates between humans expressively refer to the non-linear epistemology of the sonic temporal field²⁸ and thus provide a model for non-historic ways of writing media time. In a benevolent re-reading, McLuhan's notion of the "tetrad" suggests a diagrammatic media archaeology dealing with recursive reconfigurations.

McLuhan (father and son) in *Laws of Media* describe the artists of their time as "the antennae of the race" who "had tuned in to the new ground and begun exploring of discontinuity and simultaneity" <McLuhan / McLuhan 1988: 47>. This is not meant metaphorically, but uses terms of radio technology. They quote from T. E. Eliot's 1917 essay on "Tradition and the Individual Talent" where what Eliot named *historical sense* is - in McLuhan's paraphrase - the awareness of a "resonant interplay". According to Eliot, the whole of the literature of Europe from Homer "has a simultaneous existence and composes a simultaneous order"²⁹. Instead of historicism, this is short-circuiting epoches which are distant in terms of historical time but immediate to each other media-

²⁴ Photographic colour reproduction in: Leeker (ed.), McLuhan neu lesen 2008: 331

²⁵ McLuhan im Interview mit Jerry Brown, in: The CoEvolution Quarterly, Winter 1977/78, zitiert in: Letters of Marshall McLuhan, selected and edited by Matie Molinaro / Corinne McLuhan / William Toye, Toronto / Oxford / New York (Oxford UP) 1987, 177

²⁶ Marshall McLuhan, The Playboy Interview: Marshall McLuhan, in: Playboy Magazine, März 1969; Wiederabdruck in: Eric McLuhan / Frank Zingrone (Hg.), The Essential McLuhan, London (Routledge) 1997, 233-269 (*online* www.columbia.edu/~log2/mediablogs/McLuhanPBinterview.htm), as quoted here from: Martina Leeker, Camouflagen des Computers. McLuhan und die Neo-Avantgarden der 1960er Jahre, in: DeKerckhove et al. (Hg.) 2008, 345-374 (352)

²⁷ See Tony Schwartz, The responsive chord, Garden City, New York (Anchor books) 1974, 27

²⁸ "In watching television, our eyes function like our ears": Schwartz 1974: 14

²⁹ Eliot, Selected Essays, quoted in McLuhan / McLuhan 1988: 48

archaeologically. This modality is genuinely time-bound, thus: "acoustic" rather than visual.

Electro-acoustic space

Recent years proclaim - as a counterblast to the so-called "visual turn" or "pictorial turn" as declared by W. T. Mitchell long ago - another rebellion against the McLuhanite Gutenberg galaxy, which is the "sonic" or "acoustic turn", accompanied by new methods of making information and even knowledge accessible over the so long neglected acoustic channel of perception (audio interfaces, methods of sonification of data to the time-sensitive ear).

It has been McLuhan who anticipated this turn already, a theorem bound to his analysis of the electronic age which he sharply discontinues from the machinic age.

McLuhan at the borderline of digital computing

But McLuhan's apparent emphasis on electricity hampered him to conceive the computer otherwise than just in anecdotes. Maybe this was the case because he saw in the ancient Greek phonetic alphabet a kind of original sin of the occidental psyche and culture of knowledge which replaced collective *mimesis* by individualized objectivity and privileged linear, analytic, visually based acquisition of information, resulting in the "euklidic control system."³⁰

In chapter 11 of *Understanding Media* McLuhan defines the nature of the number as "an extension and separation of our most intimate and interrelating acticity, our sense of touch" <McLuhan 1964: 107> - when fingers are used for discrete counting.

But counting in times of mechanized mathematics takes another dimension.

McLuhan's *Understanding Media* finishes with a chapter on "automatization"; up to this limit the author in 1964 perceives the computer.³¹

McLuhan, with his servomechanistic concept of man-machine symbiosis, heavily refers to the cybernetic epistemology of his days, but significantly blinds out its mathematical foundation on which Norbert Wiener always insisted - a mathematization which ultimately replaced McLuhan's vision of a synchronous, instant and resonant "acoustic space" by digital calculation.³²

The essential von-Neumann architecture of current computing as

³⁰ Bruce Powers im Gespräch mit McLuhan, in: Marshall McLuhan / Bruce R. Powers, *The Global Village. Der Weg der Mediengesellschaft in das 21. Jahrhundert*, Paderborn (Junfermann) 1995, Kapitel "Von Engeln zu Robotern: Vom euklidischen Raum zum einsteinschen Raum", 169-184 (175)

³¹ See Jens Schröter, *Von Heiß/Kalt zu Analog/Digital. Die Automation als Grenze von McLuhans Medienanthropologie*, in: Derrick de Kerckhove / Martina Leeker / Kerstin Schmidt (Hg.), *McLuhan neu lesen. Kritische Analysen zu Medien und Kultur im 21. Jahrhundert*, Bielefeld (transcript) 2008, 304-320

³² See Martina Leeker, *Camouflagen des Computers. McLuhan und die Neo-Avantgarden der 1960er Jahre*, in: de Kerckhove / Leeker / Schmidt (eds) 2008: 345-374 (357)

algorithmic and storage-programmable symbolic machine is acknowledged only in the posthumously edited work *Laws of Media*). But here again, in the best tradition of the central thesis of *Understanding Media*, McLuhan (both father and son) try to identify the central "message" of the digital computer, less than its social impact which has been dominated by the "Personal Computer" concept and Graphical User Interface since.

In an uncanny way McLuhan transforms from a historicised media theorist into an up-to-date model exactly when reading his posthumous work. This after-life is part of the argument already. All of a sudden, McLuhan seems a little bit less dead, when reading his identification of computing media as a machine whose essential message is rooted in its delicate time management. Under this aspect, the computer as the dominant medium of today can not only be understood more precisely, but turns out to be a chrono-poet itself, actively reshaping current culture on the basic level (or *a priori*) which George Kubler once described in his *Shape of Time*. Even though this insight has been borrowed from other scholars as ever in McLuhan's fast-processing works, it is directed by a remarkable skill to identify the crucial and original arguments: "Jeremy Rifkin shows that, thanks to the computer, visual centralized time is as obsolete as visual space. The Central Processing Unit orchestrates a ballet of operations in simultaneous times, chronology in counterpoint" <Marshall McLuhan / Eric McLuhan 1988: 53>. This is an understanding of *mousiké* in its ancient Greek sense. Here, McLuhan comes close to what has recently been termed the "algorhythmic" (Shintaro Miyazaki)³³ - carrying his notion of "acoustic space" into the digital kernel.

Thus the computer is not just time-based as performing arts and technical media before, but itself becomes chrono-poetical. A distinguishing feature of the computer is "its temporal creativity" <Marshall McLuhan / Eric McLuhan 1988: 53>. Referring to David Bolter's *Turing's Man*³⁴, McLuhan points out "that while clocks are all set to the same exacting sequence, duration, and rhythm, the computer is free to manipulate all three of these temporal demensions by merely changing the program" <ibid.> - which is true especially for the von Neumann architecture of computing, a concrete embodiment of the algorithms as being-in-the-world, and thus: in time.

"With this new timepiece, time is no longer a single fixed reference point that exists external to events. Time is now 'information' and is choreographed directly into the programs by the central processor" <Marshall McLuhan / Eric McLuhan 1988: 53>; this "choreography" is media theatre in its dramatic, time-operative sense. "With computers we enter the age of 'multiple times'. Every program has its own sequences, durations, rythms, its own unique time" <Marshall McLuhan / Eric McLuhan 1988: 53, referring to David Bolter>

The clock dial is an analogue of the solar day, an acknowledgement that we perceive time revolving in a circle, corresponding to the rotation of the earth. In contrast, computer time is independent of nature: it creates its own

³³ Shintaro Miyazaki, *Das Algorhythmische*. Microsounds an der Schwelle zwischen Klang und Rhythmus, in: Axel Volmar (ed), *Zeitkritische Medien*, Berlin (Kulturverlag Kadmos) 2009, 383-396

³⁴ David Bolter, *Turing's Man*. Western Culture in the Computer Age, Chapel Hill (The University of North Carolina Press) 1984, 38f

context³⁵

- up to so-called Internet Time. Genuine media time is *Eigenzeit* just like in acoustic space "every thing or event creates its own space, and time" <Marshall McLuhan / Eric McLuhan 1988: 53>.

"The computer imprints a unique temporality into every program" <Marshall McLuhan / Eric McLuhan 1988: 53>, which makes all the difference between an algorithm written with pencil on paper (like a musical score) and its implementation as an actually running program (like a musical performance differs from its symbolic score). The message of the computer as medium is not just its temporality, but more: its different hard- and software-biased tempo realities. The totalizing cultural and semantic reference "time" implodes. It is the timing mechanism within the computer which brings it close to what Aristoxenos once coined *chronoi* for measuring the temporal duration in music, dance and prosodic speech).³⁶ Media theory, today, thus needs to be algo-rhythmic itself, just as the conventional concept of media history is being replaced by chrono-archival reconfigurations and media-archaeological recursions. Thus, re-reading McLuhan still sets media theory in motion.

³⁵ Marshall McLuhan / Eric McLuhan 1988: 53

³⁶ Aristoxenus, *Elementa Rhythmica*. The Fragment of Book II and the Additional Evidence for Aristoxenian Rhythmic Theory, ed. Lionel Pearson, Oxford (Clarendon Press) 1990