[Wolfgang Ernst: NOTES ON TECHNICAL MEDIA]

NOTEBOOK "MEDIA THEORY, AND TECHNO*LÓGOS*"

[unedited cursory notes, theses, excerpts, grouped into thematic blocks]

Thematic blocks:
- *Media Theory*
- *Technológos*
- *Artificial Intelligence and "Deep" Machine Learning*

Detailed content of blocks:

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- Limits to the Extended Understanding of Media
- Towards a Media Science

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- Double "ghost lectures" / "ghost readings"
- Digitization of Academic University (triggered by "Corona")
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- (Media-)Experimental "Teknowledge" Economics. "Mediating" economic communication vs. media techno*lógos*

- Techno*lógos* and / or "terramorphosis"
Giuseppe Longo, Le cauchemar de Prométhée. Les sciences et leurs limites
- Technology and the "Political"
- "Cosmotechnics"? Technology in the Anthropocene

TEHNOLOGOS (podcast dialogue Maks Valenčič / W. E.)

ENHANCING THE "ERROR". A TECHNO-LOGICAL HERESY
- "Errors" in the Presence of Noise
- Error's Two Bodies: Hard- and Software
- Redefining the "Artefact"
- "Typos" in Printing
- Erring Hardware
- There is no "Error" in Techno-Logic
- Frictions
- Letting Errors Articulate: Media Philosophy "by other Means"
- "Bug" and "Glitch" in their Epistemic Dimension
- Enhancing the Error: Media-Aesthetic Dimensions of "Glitch Art"
- Knowing how to get lost: Erring instead of "error" detection
- "Error" in / as AI

Artificial Intelligence and "Deep" Machine Learning:

NOTES ON ARTIFICIAL INTELLIGENCE AND "DEEP" MACHINE LEARNING
- On the "X"plainability of Artificial Intelligence
- "Memory" vs. Markov chains in artificial (voice) data training
- (A)Imaging the MAF
- "Thought in the act" (Menning / Massumi)?
- "Journey to Faremido" (Frigyes Karinthy)
- (A)Irony in last chapter *Transitive Media [Philosophy]*

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Media Theory:

NOTES ON MEDIA THEORY

Limits to the Extended Understanding of Media

- care for differentiation between technology and non-technical media; current extension of "new" media (beyond its temporal / technic-historical sense) to "bio-media" etc.; in media-artistic projects of sonifying ambience: usage of un-natural / negentropic technology to better "understand" so-called nature / provides Walt Disney his comic figure Donald Duck, for its cartoon film version, with a human animal

voice imitator to turn it into articulate speech; Aristotle's exception for otherwise unarticulated animal sound: birds

- Shannon-Weaver diagram a technological operation: mateRealization of information (source / "spirit" / mathematical ratio) into articulated communication (alphabet / speech / telegraphy); cultural sign, in the semiotic sense, becoming signal to be communicatable over a channel

- current media theory - extending to geological strata, "rare earths", and its extractions of chemical lithium for batteries - about technology no more? epistemic capacity unfolding from material level of "media"; analysis of media technology not to be confused with "mediative" function

Towards a Media Science

- necessary precondition for "media" analysis: sound knowledge of its technological core; from there branching into more social, or phenomenological, economical, political and other contextualization; "radical" media archaeology, though, rather staying *within* the technological analysis, to create epistemic insights from techno-logical materialities themselves

- defend European / occidental / "enlightenment" standards / logocentric (sic) rigour of (media) science against activist / "postcolonial" speculation / relativization

ON THE EXTENDED "LOCKDOWN" MODE OF ONLINE UNIVERSITY TEACHING, AND THE UBIQUITOUS ALGORITHMIZATION OF ACADEMIC RESEARCH

- state or the art in April 2021: looking forward to seeing less "images" from computer screens, and see real student faces again, as soon as post-pandemic university takes place again - but then, is there any knowledge- and *lógos*- related "essence" of academic teaching and learning ("embodied" or not), which cannot be "digitized"?

- on the "non-digitizable element" in university teaching and learning practices: still necessity more than simply "social" argument that the university must be founded on meetings and exchanges where students and teachers appear to each other in real presence; especially for faculty members "speaking as belonging to the generation before the digital natives" = e-communication Jacob Lund (Univ. of Aarhus) on April 28, 2021 / "old school", a more precise epistemic definition required of what Zoom video conferencing could ever substitute - "maybe in part but never fully" (Lund). / practice; recent "livestreamed" lectures;

Agamben's question, whether an academic "contact" can be maintained via Zoom, on the paradox that the "digital", although etymologically related to the hand, does not allow for indexical, only electric "touch"; Agamben's text: https://illwill.com/philosophy-of-contact

- urgent to launch a spontaneous response to the challenge of the COVID-19 virus to culture, and practice; facing the "lockdown" of most public life, an ongoing discussion about the "systems relevance" of "soft" issues like culture, and aesthetics in such times; humanities's apparatus of research and text production, however, "much less agile than our minds" – therefore only belated "postpandemic" reflections on its consequences = e-communication Jacob Lund, December 16, 2020 - the usual "lag" of humanities, *versus* Virilio-like capacity for analysis in "realtime" in the military strategic mode; the consequences *of* the pandemic vs. consequences of the plague / contagion *on* aesthetics

Double "ghost lectures" / "ghost readings"

- students editing Media Theories' "ghost lecture" ("Log book Media") during first semester of Corona lockdown of Humboldt University (summer term 2020) in German; part of the text actually an automated speech-to-text transformation ("Watson") of the video-recorded / transmitted "live" lecture = Wolfgang Ernst, Geistervorlesung. Techniknahe Analyse in Zeiten der Pandemie, edited by Thomas Fecker & David Friedrich, Glückstadt 2021; "[...] intriguing that it was partially done with automatic technologies. This adds an extra layer of interest to it - too bad that I gave up on learning German after reaching B.1 at Goethe Institut which was not enough [...] to even learn how to write an e-mail in German [...]. I am happy to use Deep L for automatic translations of German texts that I want to read, when they are available as digital documents" = response August 7, 2021, Marcus Bastos from Sao Paolo - which actually is the perfect machine learning "reader" response to the automatic "Watson" transcription of my lectures! In the end, algorithmicized readers will read algorithmically produced texts - a different kind of posthuman "academic" knowledge transmission

Digitization of Academic University (triggered by "Corona")

- Jussi Parikka, Digital Contageons; expert on computer viruses (the symbolical) protecting against the micro-biological virus (the real) once genetically decoded; counter-weapon mRNA (vaccine) built on informational concept (non-invasive, no genetic manipulation)

- academic return to "normal life" / to a life of calm after pandemic COVID-19 plague? even in Wuhan, people’s life restarting "after pressing the 'pause button'. Everything seemed the same as before, but

something looks different than before"= Chen Wei, 25 September, 2020; a different discursive atmosphere; change for old European university as institution of knowledge dramatic; academic "home office" and the digitization of teaching and research having a serious impact on the self-understanding and definition of what represents the core of university, with restricted seminars or lectures in real presence; urgent need to reflect on that radical transformation; combination of "Corona virus + digitization" actually transsubstantiating the essence of academic university; its delegated to (and subsequent substitution by) online-services

Snippets on Teleconferencing

- participant asking, in the videoconference discussion following Paris *Technologies de la Visibilité* conference lecture WE "The Image Function" (November 2020), on political biases of machine learning and AI, immediately got an invitation to participate at another Zoom conference on "Security" - by human attention, or a machine logic / profiling behing Zoom software itself?

- remembering the first round of lockdowns: a couple of students (professional DJ's in the club scene) organizing online parties *via* YouTube and Facebook streaming services "surprised to discover that when any copyright material, even in short samples, appeared in their streams, the connection was cut within a matter of seconds. Even with obscure small edition albums" = electronic mail Raviv Ganchrow, Dec 4, 2020; Ganchrow "skeptical that their signals were really being monitored considering the amount of data crisscrossing the net in streaming during lockdown and the fact that DJ mixes often have overlapping audio tracks that would make the recognition process all the more calculation heavy" = ibid.; according to DSP expertise apparently possible "by way of an older set of algorithms coming from genetics, specifically tree-structure algorithms for DNA sequencing" = Ganchrow ibid.; thereby connecting to decoded Corona-19 virus and the mNA coding of its counter-vaccine; this algorithm "highly efficient in tracking any pre-catalogued sequenced data signatures like those of audio waveforms. And given other advances in speech recognition machine listening, it too could be standard protocol by now every time we go live" = Ganchrow ibid.; fascinating evidence of automated "censuring" (aka copyright-protection) for YouTube audio livestreams; what will occur in online transmission of weekly university lectures; underlying algorithms stemming from genetics making it even more ironic in times of the pandemic virus triggering such explosions of "streaming media" communication

Techno-logical resistance: "I'd prefer not to"

- "other-than-human", living-being perception, vs. machinic perceptronics; idea of machinic interoception

- human fatigue of "online" teaching and conferencing, in the sense of the proverbial "I'd prefer not to" by Barthleby in the eponymous novel of Herman Melville; even case of online participation, all of a sudden, technical reason itself intervenes, turning the "I'd prefer not to" into an articulation of techno*lógos* itself (which is inherent technological reason): browser suddenly resisting to install further necessary package updates of the video conferencing software Zoom

In analogy to an interpretation by Slovoy Zizek in his book *The Parallax View*, Bartleby's “I would prefer not to” is to be taken media-literally, "to discern the void that separates material reality from itself" (Zizek ibid.)

[For this extract, see web site "Disturbing Bookclub ", https://disturbingbookclub.tumblr.com/post/160523968635/i-would-prefer-not-to-is-to-be-taken-literally, accessed February 2, 2022]

- corresponds with core hypothesis of book contribution "Do Media Have a Sense of 'Time'?"

["Do Media Have a Sense of 'Time'? Chrono-Technical Interoception", in: Natasha Lushetich / Iain Campbell (eds.), Distributed Perception: Resonances and Axiologies, London / New York (Routledge) 2021, 49-63]

since radical media archaeology - the method proposed - takes the "parallax" view of technology *from within* (in perfect media-archaeological alliance with Conor McKeown's contribtion "Autobiographing our computing organs. Rereading past uses of Intel CPU as xenotransplantation" in *Distributed Perception* book, and Adrian Mackenzie's article an Machine Learning), asking: is there something like a temporal perception within technology itself, comparable to Edmund Husserl's "Phenomenology of the Inner Sense of Time", or is the time dimension a human projection upon such devices?

- a specific reason why a minority group of authors in *Distributed Perception* book focuses on technologies, since different from more speculative realism, the technical scene allows to ground such inquiries in experimentally verifiable "phenomenotechnical" scenarios, granting a "veto right" to matter and energy itself

Technológos:

NOTES ON TECHNO*LÓGOS*

- techno-logical *Erkenntnis* for the sake of techno-epitemic beauty itself,

analogous to Kant's *interessenlosem Wohlgefallen* in aesthetics (*Kritik der Urteilskraft* 1790)

- similar to the literal *mechané* (the crane) in ancient Greek theatre from which an exterior intervening god as 'deus ex machina' occurred in aporetic situations

- combining,in the shadow of alphabetic scripts, the numerical / computational code with the voice via telephone "call", thereby testing Lacan's notion of the Borromaean knot which (impossibly, since voice is digitized in transmission) entangles the symbolic with the real

- between the symbolical regime of the musical composer (score) and its "embodiment" with the idiosyncrasies of the real musician: reasons for maintaining the disctinction, while at the same time blurring / interference: already in the composer's bio-chemical mind "material" co-articulation of the real against the idea of pure notation, while at the same time actual musician already "coded" by score literacy; difference to human programmer vs. radically non-human computational electronics; in between: so-called computer music

- "How are the mental and the material, mind and matter, related to one another? [...] one of the big questions of sciences and humanities through centuries" = web site Society for Mind-Matter Research https://www.mindmatter.de, accessed June 27, 2023; still semantically continuing dichotomy, though, vs. "radical" media-archaeological analysis: originary co-evolution, avoid binary vocabulary, still taking differentiation into account

- the Humanities as academic disciplines of human history and society primarily concerned with cultural sense-making; methods primarily historicist, interpretative and critical. Their study, though, (again) epistemically relegated to empirical natural or formal sciences (like mathematics) by technologies that entangle culture and nature in complicated ways

- rather differentiate into triple: mind / brain / embodiment; degrees of "objectivation" of the mind; technological analogy: hardware / software / robotics (sensors) & "mind"; transitive corporeal bias vs. intransitive "mind"; in between: neural signal processing

- easier in (spoken) English, as Derridean *différance*: correlation of "technology" and ("techno-logical") "tec-knowledge" as the essence of techno*lógos*; implicit vs. external techno-knowledge

- following philosophies of technologies which define them as co-evolutionary with the definition of the "human" itself

- question concerning technology not just a contemporary, but a principal one. "Strictly speaking every Age of mankind is, since from the very beginning", *en arché*, "a technological" and not simply technical "age" = "Presentation" of the forthcoming *Mechane* Journal of Philosophy and Anthropology of Technology (January 2019) - at least in terms of coding (the symbolical regime) by articulated language. In favour of a genuine media-epistemology, differentiation between "technology" and "technique" (as technical "extensions of man"; this relation not simply an evolutionary one), rather a media-archaeological rupture

- mind and / as machine: unlike the unconscious of psychoanalysis, according to Marie-Luise Angerer, Nonconscious. On the Affective Synching of Mind and Machine, Lüneburg (meson) 2022, the nonconscious "no longer coupled to a subject grounded in language, instead acting as an affective link between technical, mental, and physical processes" = https://meson.press/books/nonconscious, access 4th April, 2022; according to techno*lógos*-hypothesis still a different kind of "language"; logocentrically assuming a machine-induced logic unfolding in coupling with human mind, different from *alógos* of brute matter; knowledge-informed matter (techno*lógos*) confronting matter's idiosyncrasies and entropy (techn*alógos*)

- techniques becoming truly techno-logical (TL hypothesis); imposing their own *endo-mateReal logics* onto pure symbolical idealism / still "logics"?

Lógos / sarx: Technology, theology and / as "Embodiments of the Mind"

- nicht schlicht "translate the statements of the logical calculus into / mechanical switching elements of any other physical implementation. This final step in the process would 'make the words flesh' [...]. Zuse proposed the name *Logistik* for such work." = Paul E. Ceruzzi, The Early computers of Konrad Zuse, 1935-1945, in: Annals of the History of computing, vol, 3, no. 3 (July 1981), 241-262 (247 f.)

- such transitive medium *aisthesis* in the Aristotelean sense reminding of another, rather theological figure of thought: according to the *lógos / sarx* theorem, pure *lógos* (a. k. a. "god") becoming subject to physical - that is: entropic - existence by becoming flesh - to be dialectically reconciled by Jesus Christ's final ascension; technologies, though, different configurations of this (supposed) mind / matter dichotomy, coming into existence as an equiprimordial entanglement

- at Pentecost, the Holy Spirit, as language, literally embodied into humans (wetware) in tongues; alternatively, by compilers, symbolic

software becoming implemented not simply *in*, but *as* techno-logically informed hardware

- complications in the entanglement of logical reason and / as technical matter known - in disguise - from Christian theology; Jesus Christ as the "embodied", therefore literally: "earthed", and temporally limited incarnation of God, after his crucification "returning" to God at Pentecost; as an epiphany, though, Jesus still "talking" to the apostles 40 days after: an existence that oscillates between spirit and body; only then finally positioned right next to God on Ascension Day

Expressing *lógos* in / as technical being

- technical (in)formations of matter / as machine; misleading translation "in being" in German: "im Sein"; German "im Vollzug" rather: "in execution"

- (in)formations of matter, and the computational machine; "technology" as subject of investigation, and "media archaeology" as method

- tracing / identifying techno*lógos*, towards a radical media-archaeological understanding of technology

- technical media epistemology / techno*lógos* hypothesis, about sparks of knowledge springing *from within* technological devices (both hard- and software), below the "audio-visual" phenomenal media interfaces, though

"Algorithmic Thought" and / or Media Thinking

- in analogy to computation / computing differentiation

- according to Freud, logocentric thinking belonging to the domain of the preconscious: 'das Denken in Worten': Sigmund Freud, 'Das Ich und das Es' [GO 1923], in: idem, Gesammelte Werke 13 (London: Imago, 1940), pp. 237–289 p. 248

- beyond Heiddegger, the "Question concerning algorithm": essence of algorithm, once implemented, nothing algorithmic, rather time-discrete, processual / procedural analytics / machine; replace ontologic question "what is" by "what it does"

- non-philosophical approach, first of all: inductive, derive epistemic sparks from within the techno-mathematic object; metaphysics returning into / becoming the machine; a non-human becoming "medium" of thought

- Heidegger's critique of technical instrumentality vs. techno-logical implementation; "embedded mind" (Andy Clarke) returning *via* computing"; *lógos* becoming processual in sense of (data-procedural) "collecting" (*legein*)

- automation of thinking replacing philosophical quest for "truth" by Cartesean procedure / method / algorithm; ex-carnated thinking (parallel to Deleuze, on cinema)

- not only "glitches" breaking logic, but logic itself incomplete = Luciana Parisi, as proposed at TCS-Research Workshop "Algorithmic Thought / Digital Power", March 18, 2019, at SAGE Publications, London; formal reasoning becoming incomplete with Church / Gödel; experimental axiomatics (Dewey)

- from computation to computing: Turing's 1937 negative answer to Entscheidungsproblem, but resulting in the most effective turingmachine

- from AlphaGo "machine intelligence" to AlphaGoZero: playing against itself, from learning rules, no human supervision / no "big data" input

- TM not simulating human brain ("Deep" Learning), but emulation; if mind / computing relation can not be measured / mapped, literally "incommensurable" = Beatrice Fazi, as proposed at TCS-Research Workshop "Algorithmic Thought / Digital Power", March 18, 2019, at SAGE Publications, London); Leo Breiman, Statistical Modeling: The Two Cultures, in: Statistical Science, vol. 16, no. 3 (2001), 199–231

- "hermeneutic ghost" DARPA's "explainable AI" initiative (Fazi), vs. "flat ontology"

- non-linear "layers"; new metaphysics lurking behind the hermeneutic "hidden" rhetoric; "black box" input / output, as long as the between can be mathematically modelled, remaining within the symbolic regime

- neural networks realized in computer graphics chips: schematic concept of "image"; visual pattern-recognizing "Perceptron" (Rosenblatt 1957)

- McLuhan's lococentrism: "If it is asked, 'What is the content of speech?', it is necessary to say, 'It is an actual process of thought, which is in itself nonverbal.'" = Understanding Media. The Extensions of Man, 5th ed. London et al. (Routledge) 2005, 15

Escaping "Ontology": Articulations of Techno*lógos* with Freud / Lacan

- "typo" *massage* instead of *message* for book title *The Medium is the Message*" (Marshall McLuhan, with Quentin Fiore, 1967) a "slip of tongue" in the techno-logical sense, both materially, and logically; see web site "Commonly Asked Questions about McLuhan – The Estate of Marshall McLuhan", marshallmcluhan.com, accessed April 3rd, 2021; answer by Dr. Eric McLuhan to 'Why is the title of the book The Medium is the Massage and not The Medium is the Message?

- human typesetter one the one hand, but more immediately: the typeset letter frame itself, in its materiality and probabilities (Shannon / Vief)

- technical knowledge from within, a "real" which desires to be articulated in / as the symbolic order; therefore depending on human embodiment (brain / thought) respectively (electro-)technical embedding / implementation of source code in computing in order to become operative (being-in-time, with Heidegger); equation of the real with "to be", but technology always in being ("*on*tology", participle present); "enactment" = Martin Carlé, Dance as a means of programming in Networked 4E Performance Environments, 1st draft March 26, 2023

The Techno-Logical Allurement

- techno-mathematical "standing reserve" (Heidegger's *Ge-stell*) inviting to be inhabited by / as (human) intelligence, while at the same time being subject to physical limitations; weak interpretation: heuristic media-theoretical hypothesis / depends on human scientific curiosity to become explicit (techno*lógos*); strong interpretation: techno*lógos* "in being", involving human intelligence like "memes"

Media-Aesthetics from within Technology

- "The partial tones are part of something that they themselves produce in the fi rst place." = Berhard Siegert, Mineral Sound or Missing Fundamental: Cultural History as Signal Analysis, in: Alexandra Hui / Julia Kursell / Myles Jackson (eds.), Music, Sound, and the Laboratory from 1750 to 1980, Chicago. Il. (Univ. of Chicago Pr.) 2013 [Osiris series, vol. 23], 105-118 (117)

- thinking and writing *with* and *by means* of objects of media-aesthetic experience, instead of cold, distant reasoning about art forms; aesthesiographical focus on moving images, sound art, and other media-cultural practice; "practical aesthetics" the academic companion to practice-based artistic research; Herzogenrath (ed.), *Practical Aesthetics*; Barck et al. (eds.), *Aisthesis. Wahrnehmung heute*

- media art works no intransitive objects of distant intellectual analysis,

but inviting analytic reason to get affected by their own *modus operandi*; "sensate thinking" (Herzogenrath) *with* the matter of aesthetics, widening the analytic scope to its embodied channels; aesthetics in its own medium (and media); conquering *aisthesis materialis*

- replacing lofty philosophical judgements on media art works by precise case studies in materially, or technically, embodied *aisthesis* in its original sense, ranging from technical media such as VR, to cultural techniques such as museology and dance

- material (if not "medial") *aisthesis*, in the Aristotelean sense of the actual matter of perception; against conventional logocentristic, word-centered approach, paradigmatic case studies re-interpreting the aesthetics of multi-media artworks and artifacts as an encounter between human cognition and the physically real

- tracing the matter of artworks and technical artifacts *from within* its own inherent qualities; striking sparks of aesthetic knowledge by precise case studies in applied material practice; instead of getting lost in philosophical abstraction, taking into account the productive frictions which arise from the encounter of cold academic analysis, and empathetic co-aesthetic experience

- technology and aesthetics contradictory realms? "practical aesthetics" an operational (rather than passively analytical) approach to media objects of research, without reducing its effect to the straightforward apparatus; aesthetic matter linked to, but not exclusively determined by technical practices; focus on the aesthetic message of material practice, rather than aesthetic content

- "teknowledge": its inherent techno*lógos* and experiential "phenomenotechnique" (Gaston Bachelard) the reason for the emergence of technology as cultural agency

Relating Technology to Ontology

- main media-technical / -archaeological issues epistemological rather than ontological

- analytic ontology (Alfred North Whitehead) focusing on the processual "event"; processual ontology close to the essence of media technologies itself (since only when being in operation a medium is in its medium state); media archaeology (different from the apparent archaeological metaphor) not uncovering artefacts but events

- "ontological reversal" whereby activities of cultural techniques such as counting *precede* the associated concepts such as number, normally

thought to come first" = Winthrop-Young, Geoffrey, Cultural Techniques: Preliminary Remarks, in: Theory, Culture and Society 30, no. 6 (2013): 3–19 (15); material symbol manipulation (material *token*, Hilbert)

- matter / energy *pre*conditions of technical media, but not yet media archaeological objects; rather processes like electro-magnetic induction (and not steel and magnetism for Wire Recorder); Aristotle's Metaphysics focussing on form and matter, not process: "[…] from Aristotle onwards ontology has dealt with the matter and form of things rather than the relations between things in time and space" = Friedrich Kittler, Towards an Ontology of Media, in: Theory, Culture & Society 2009 (SAGE, Los Angeles et al.), vol. 26 (2–3), 23–31 ("Abstract")

-technologies in ("media") being escaping the ontological question (not simply "forgotten", or rather: systematically "forgotten")

- not static "ontological" objects, but micro-momentary processes revealed in media-experimental settings (a kind of Heideggerian *aletheia*, "Lichtung" / electric lightning) media processes defined by patterns of signals unfolding in time; *dynamic ontology*: frequencies instead of beings, quantities instead of qualities and functions instead of attributes, to paraphrase Bernhard Siegert (referring to Max Bense) = Siegert, Cacography or Communication? Cultural Techniques in German Media Studies, 40: "Like physics, aesthetics is a science whose primary object is signals, the physical materiality of signs."

- instead of meta-discursive approach to the phenomenon of material aesthetics, inductive argumentation *from within* the techniques and aesthetic matter; signal-processing point of view of the machine instead of "sensual" aesthetics privileging human experience on the phenomenological level

- Beatrice Fazi actually writing a piece comparing "different ways of relating technology to ontology according to three frameworks - digital humanities, cognitive science and German media theory"; any "virtual mediation" co-articulating techno*lógos*; message after interrupted Zoom teleconference; while discussing this topic: "The unbearable lightness of being has killed our internet connection! […] Maybe we can continue via email, or attempt virtual mediation in the future again" = Beatrice Fazi, electronic (re-)communication 2nd. March, 2021; old computer, for over-heating in Skype / Zoom video conferencing, interrupting communication by its sudden breakdown; the machine probably afraid of the conversation topic, the "ontology of media", since this concerns the question of computing itself

- a more critical distinction between the metaphysical question of ontology ("to be") vs. the technological question of the processual ("in

being") required; Kittler's use of the term in his "Towards an Ontology of Media" in TCS 2009; some thoughts in proposed contribution to the book which might never "come into being" (*Philosophy After Computation*)

- paraphrasing / redefining from *TECHNOLÓGOS IN BEING. Radical Media Archaeology, & the Computational Machine*:

- lofty philosophical deductions, with its rather liberal, extended and generalized notion of a "machine-oriented ontology" (Bryant 2014: 15), metonymically musing about the essence of machines but rarely coming close to their specificity as technology / their techno*lógos* in detail; avoiding ontological metalanguage by deriving epistemic insights from close analysis of technological processes from within

- for radically process-oriented media ontology, any technology only coming into being by its very material / energetic ("mateReal") embeddedness *a priori*

- radical media archaeology, in combination with object-oriented ontology, tracing technological operations down to its material and logical roots, such as its core algorithm; emergent phenomena in big data processing revealing their algorithmic knowledge only when in action

- media archaeology checking human-centred media cognition against an ontology of technology from within, thereby avoiding the metaphysical allure

- non-anthropocentric philosophy of technology recognizing the inherent epistemic relevance of technology from within, towards a process-oriented ontology

- disability studies (such as Jonathan Sterne's Diminished Faculties) vs. non-anthropocentric approach to media techno*lógos*

- techno-locative and time-critical identification / archaeographical description of the interlacing of *lógos* and matter in concrete media-technological scenes; attempts towards a more comprehensive ontology of techno*lógos*-in-being

- against media-philosophical ontology asking for what computers are in essence, "one should focus on what they do: they *execute*" = Gauthier 2018: 156; algorithms requiring to be implemented in the material technique itself to become active

- very term "technology" reminding of this split ontology: It is not only the science of *techné* but of its *lógos* as well

- with the analysis of the materialities of technical operations, philosophical ontology enriched with a processual, temporal turn: *lógos*-in-being, a being-in-operation; technologies "being" in their analogue respectively digital "media" state only when transducing signals and processing data, as systems with *eigentime* = Berressem 2018: 86

- even if not primarily considered the decisive epistemological condition of human culture, avoiding reduction of technology to a mere subset of a more fundamental ontology

- technologies inexorably operating by exact definitions of their own; can be analysed in the media-scientific laboratory, instead of getting lost in otherwise speculative techno-realism; media archaeology insisting on such grounding, precisely identifying the techno-logical scenes

- tracing the *arché* of technical media, the primary confusion stemming from the question of the "essence" of technology. According to my media-theoretical definition, "media" come into existence only when in operation, signal-processually. There is no "to be" but only "being" for technologies, which is often mistaken for their "ontology". Of course, literally "ontology" already refers to a present participle (ancient Greek *on*), that is: the operative "mateRealities", rather than to "to be", but is conceptually mistaken when used to identify timeless (transcendental, metaphysical) qualities.

- Kittler on media ontology, in: TCS 2009; still inserting the question into a "history of being" (Heidegger's "Seynsgeschichte"), whereas more radical media-archaeological approach keeps the question of technology apart from ontology right from the beginning (*en arché*, or diagrammatically "from scratch" as expressed by Kittler, p. 30) in a non-historical epistemic frame. While most of Kittler's examples still refer to cultural techniques (alphabetic writing, the book form, etc.), a more rigid restricting of technical media to events like the electro-magnetic induction cannot be linked to the history of ontological debates but rather create a break; question of technology has not simply be "forgotten" in the history of ontological ideas (McLuhan, Heidegger, Kittler), but has / is a distinct epistemic field at all; remain two options: either widening the concept of "ontology" in a more literate sense, with the "on" as participle present addressing processual being (close to Whitehead, but this time not applied to natural science, but to its coupling with technical lógos), or keeping "ontology" distinct from the thinking of technology, since the philosophical tradition has limited "ontology" too much, therefore in combination with technology, it will always make associate the wrong questions; actually not fundamentally different from Kittler in TCS, but maybe a more radical emphasis of his implicit argument. Where Kittler still enframes the relation of technology and ontology within a historical (explicitly "recursive" knowledge frame as two related emanations, radical media archaeology tries to rethink

them aparat with an different tempoR(e)al; where Kittler still sees technological autonomy within history (after all, as introduced by TCS, Kittler has been the "chair of Aesthetics and Media History" at Humboldt University), rather grant techno*lógos* an autonomy of its own, not related to any "historical ontology", in favour of a more processual ("atemporal" in a double sense) ontology

- "An anti-ontological approach to media, a radical opening of the analytical domain to any kind of media process, has been more productive and theoretically challenging than any attempt [...] at answering the question of what media 'are'" = Eva Horn, There is No Media, in: Grey Room 29 (Winter 2008), 7-13 (8)

- with Turing, the "human" - when in a "thinking" / reasoning / calculating condition - defined as inhuman: a paper machine; long desire of human thinking to get liberated from its "human" idiosyncrasies in favour of pure *lógos* (Platonic idea); becomes material in technologies, now re-entry of human cultural knowledge (technology) in nonhuman "cyber"space; pure "Geist" not meta-physical any more, but implemented in the real of technology (matter / energy), becoming "active" as in-formatized matter" a. k. a. computing; concrete: cultural techniques (alphabet) returning from within: alphanumeric code (symbolic) and microchip silicon "printing" production "lithography" (matter) = see Kittler, There is no Software - but this time operative itself; techno*lógos* taking over

Cybernetics / Interface

- intuitive, "immediate man-machine communication" = Licklider 1960 vs. symbolically coded (*lógos*) input by teletype / alphanumeric keyboard; even "speech assistants" (Alexa, Siri) forcing human to adopt to machine understandability / "formal" language as phemonemal equivalent to machine language; no "symbiosis" (term justified only for coupled organisms) but coupling of organism (man) with machine (computer): asymmetric "symbiosis", suspended by cybernetic premise of signal traffic "in the animal and the machine" (Wiener 1948)

Embodied knowledge and / or *lógos*

- logocentric knowledge genealogy of the European University; current transformation of academic life *via* pandemically enhanced "digitalization" no simple extension of classical teaching / learning into the "hybrid" realm, but a fundamental metamorphis; *Geistervorlesung* facing a camera instead of a lecture hall, in allusion to the "Geisterspiele" which means soccer plays in empty areans

- Platonic version of cultural techniques (such as writing for memory) as merely intransitive "extension" of the human body / mind, vs. "enactivism" in cognitive studies (Clark / Chalmers): "mind" coming into being only at the co-original moment of (non-)external instrumentalization, transitively

- idiosyncratic "social" factor; to what degree even academic knowledge rooted in "extended mind" (Clark) / "embedded mind" (Varely), which is reduced by "digitization" of University communication (Zoom); according to Judith Butler, Notes toward a Performative Theory of Assembly, Cambridge (Harvard University Press) 2015, "assemblies of physical bodies have an expressive dimension which is not reducible to speech, since their physical presence affect the outcome of their gatherings" = as paraphrased by Katharina Loeber, Big Data, Algorithmic Regulation, and the History of the Cybersyn Project in Chile, 1971–1973, in: Soc. Sci. 2018, 7, 65; doi:10.3390/socsci7040065; vs. (techno-)*lógos* hypothesis; assembly close to *legein* as "collecting"

Techno-logical correlationalism

- according to techno*lógos* hypothesis, technically embodied knowledge a specific form of revealing (Heidegger) which can only unfold in / as operative media; material reasoning; thought (symbolical order) implemented in mateReal an asymmetric correlation

- in Kantean "correlationalism", human insight restricted "to the correlation between thinking and being, and never to either term considered apart from the other" = Quentin Messailloux, After Finitude: An Essay On The Necessity Of Contingency, trans. Ray Brassier (Continuum, 2008), 5

- media-active (techno-logically appropriated / controlled) correlationism: *lógos* must relate to matter / energy in order to know it as "information"

- prior to discovery of fossils no knowledge about existence of dinosaurs = Levi R. Bryant, entry CORRELATIONISM. An Extract from Peter Gratton / Paul J. Ennis (eds.), The Meillassoux Dictionary, Edinburgh University Press, https://euppublishingblog.com/2014/12/12/correlationism-an-extract-from-the-meillassoux-dictionary, accessed July 20, 2021; "archaeological" pre-historic notion of *arché* (Messailloux' "ancestry") turned principal resp. structural by media archaeology: against Kantean "correlational" scepticism that whether or not things-in-themselves are this way something never knowable, media-active correlation of investigative *lógos* with *téchne*

- Karen Barad's generalization of quantum entanglement; Nils Bohr: measuring instrument entangled in observed object; measuring media

themselves form of materialized thought / investigative matter; techno-correlationism: we must relate techno-logically (that is, in technically implemented thought) to matter and energy in order to know it, such as unpredictability of algorithmic behaviour once coupled to big data (MA thesis Johannes Maibaum, on Fast Fourier Transform)

- different understanding of techno*logy*: no technical "being" apart from being "thought" by a subject, or (formal) language

Logocentric priority of "dialogue" vs. communication engineering

- difference between "communication studies" and technically-oriented "media science"; at German universities, "Kommunikationswissenschaft" mainly refering to the verbal (and audiovisual) content of public mass media - which is communication between humans; from a more technical point of view, in communication engineering (such as Claude Shannon's Mathematical Theory of Communication from 1948 which is still the standard for "digital" communication media today), there is a *non-dialogical* (or rather: techno-dialogical) understanding of "communication as well": between machines; in terms of cybernetics, even the confrontation between weapons (such as an "enemy" airplane and local anti-airplane artillery) constituting a moment of "communication" when signals are being received and processed; Roch / Siegert "Maschinen, die Maschinen verfolgen"; Hiller "Maschinen lesen", e-commentary March 4, 2022 tanghaijiang: "what puzzles me is that if the world were purely physical, inorganic, there would seem to be no good or evil. How did you solve this?"

- human cultural discourse on technology always ethically biased, but truly scientific analysis of technology necessarily (as much as possible) unrestricted from such discourses, since pure love for knowledge has to be unlimited in the first place; "radical" media archaeology experimentally assuming the view of the machine itself, or the "physical" view (if possible), coming close to what is nowadays called "speculative realism" (such as in *Meeting the Universe Half-Way* by Karen Barad); in his more popular introduction to Claude Shannon's *Mathematical Theory of Communication*, Warren Weaver pointing out that this kind of media analaysis does not ask for the meaning, of ethical values, of what is transmitted over a media channel, but rather calculates the stochastic probabilities for coded signals to be successfully transmitted at all - the difference between a technology-prone media science, and more discourse-oriented communication studies; this antithesis (roughly overstated) does not need to be "solved", but remains productive exactly because of its differences; e-commentary Haijiang Tang, March 8, 2022, on the value of an information theory or technological perspective: media-archaeological vision not "solving" the question of meaning (ethics). "The question is, how can technology escape the question of meaning?"; media-archaeological view very different from understanding of phenomenology; main differences between account of "truly scientific analysis of technology" and Husserl's account of the scientific crisis in Europe; closely related to the question of time; media phenomenology, and media archaeology (or "media science") complementary in their different approach to technology - just like *Chronopeotics* book approaching the question of time both from the phenomenal human experience of media time, such as "live", "recorded", and "real time", and

from the inner-technical "sense of time"

- decisive difference whether technologies thought, and developed (even "invented") in a discourse which "roots" technology in given environments (the "cosmotechnics" approach), which may be ethical as well, or whether mechanical symbol operations are radically "liberated" from any such references, to allow for the free play of techno-mathematical thought (a.k.a. "techno*lógos*"); Husserl, in his *Krisis*, obviously defending a concept of technology which does not lose contact with phenomenal perception of the "world", while "radical" media theory reconstructing the progressive autonomization of machine operations (both hardware, and software) - otherwise, digital computing would not has arisen, starting from Leibniz, up to the Turing machine; a remarkable temporal coincidence that Husserl's Krisis lectures were delivered the same years when Turing published his seminal article "On computable numbers": script by Friedrich Kittler from a previous conference on phenomenology in Istanbul: "Phänomenologie versus Medienwissenschaft", http://hydra.humanities.uci.edu/kittler/istambul.html

Cosmotechnical ethics?

- Jussi Parikka's *Geology of Media* looking at technologies in terms of their matter and supply chains, replacing "media" by their concrete hardware and / or energy matter (rare earths, like Lithium), but only Lithum's affordance in / as in-formatized matter, that is: its techno-*logification* turning brute matter into *medium*

- cosmotechnical ethics? = Martin Pogačar (research fellow Institute of Culture and Memory Studies, ZRC SAZU, Ljubljana, https://www.internationaleonline.org/research/politics_of_life_and_death/227_and_the_earth_along_tales_about_the_making_remaking_and_unmaking_of_the_world; against the free spirit of technical experimentation (European science in contrast to Chinese high culture); Yuk Hui's approach when applied to a concrete media-archaeological object: the escapement-driven mechanical clock.

- *Kulturtechniken* = Siegert 2023; concept of "cultural techniques" regarding anthropocenic impulse: a core of defining the knowledge-driven human neg-entropically against other (non-)beings

(Media-)Experimental "Teknowledge" Economics. "Mediating" economic communication vs. media techno*lógos*

- socio-anthropological / anthropocentric "mediation" approach to economy ("embedded" or "embodied"?), and / or epistemic economy of

techno-logical knowledge (short cut: "teknowledge") transfer in its double sense of knowledge channels and technological knowledge as such; contrastaing comparison Europe / China and / or Schäfer, Dagmar, & Valeriani, Simona (eds), Technology Is Global: The Useful & Reliable Knowledge Debate [Special Issue], *Technology and Culture, 62*(2) (2021); a brief excerpt of the content: "mostly focusing on the transfer of European URK regimes and their impact on local knowledge cultures, economic growth, and cultural prosperity. These historians also observe—often in passing—that Western URK rarely started with a blank slate and that it had to respond to local methods of mobilizing technical knowledge and generating wealth. This special issue turns the tables." = 327; "Historians of China, for instance, have identified conceptual equivalents for "Western" and "modern" usefulness and reliability" = 328

- reminder of Harold Innis pre-conditioning media studies from the economic side of trade channels / staples already, the second one rather philosophy of technology

- media message (McLuhan) of digital video conferencing: still human, or already pixel artefacts, turning communication partner into android appearance; "human relatedness" (Xiang) rather shining through the audio channel which is technically easier to process for hard- and sortware; dialogic human performance becoming more operative via Zoom; preference of acoustic "persona(re)" against visual inter"face"

- mediate ("vermitteln", "medial"); "mediation" oscillating between active, intentional participle present ("vermittelnd"), and self-acting media agency

- title suggesting rather traditional role of technical media as "mediating" communication between human agents - the anthropological / anthropocentric approach (draft Biao Xiang) which is body-related "performative" (cultural techniques, phenomenological "intentionality" with Husserl) vs. truly techno-logical "operative" (task-oriented): full machine agency; Brett Neilson / Sandro Mezzadra, book on logistics, featuring (inter-)operationality / operation; subtitle of W. E. *Chronopoetics* on operativity of technical media; Lash editing a special issue of Theory Culture & Society journal on "Ecologistics", including Xiang's piece on Yiwu in China: "a bit of an experiment" (Lash) about channels (Shannon), extending to computational media; Brett Neilson and Ned Rossiter working on logistics and operativity, joining November 2021 workshop on Zoom: tele-communicative logistics

- (inter-)operativity no abstract logi(sti)cal diagram, but embedded in actual electronic circuitry; techno-logical (negentropic / cultural) difference from un-informed, brute "active matter" (Schäffner); *lógos*-driven technical activity

- activized matter like painting incompatible with techno-logically in/formatized matter a. k. a. hardware (silicon chips); logified matter itself becoming media-active

- radical media archaeology rather assuming the machine from the beginning (Turing 1936/37), and in times of post-automata, when the techno*lógos* (such as in AI) becomes rather autonomous, self-adaptive algorithms, about truly "mediative", endogenic machine-to-machine communication

- "mediated" economy vs. "logistics of media" (inverse of "mediated logistics"), in alliance with Matthew Hockenberry, and related research project on raw materials of Humanities ("Rohstoffe der Geisteswissenschaften", research agenda Viktoria Tkaczyk)

- media-archaeological reminder: operative understanding of "media economy"; time-critical inner-technical processes as "economy of the machine" (Marx, Machine Fragment / Babbage)

- if "mediating economic life" is about human relations and non-human operations, "life" itself becomes a metaphorical function of techno-logical experimentation

- organicist "life" metaphor; redefine in terms of cybernetics

- technológos hypothesis about structural causation, against the relativities of cultural discourse

- core *Gretchenfrage* remaining: TL a hypothesis (heuristig assumption), or considered an actual agency (in alliance with Hegel's world "spirit")? cp. discussion on Gaia hypothesis by Lovelock / Margulis; cp. debate on forthcoming singularity of an AI "super intelligence"

- techno*lógos* hypothesis as an abductive (Peirce) form of experimental economics: intercultural knowledge transfer vs. co-originary, primordial emergence of inner-technical logics, defined by the various (historical / cultural) degrees of technological autonomy from human / "cosmic" / environmental / holistic discourse

- media studies emerging from Harold Innis' logistical economy; Ned Rossiter, chap. 7: Logistical Media Theory, the Politics of Time, and the Geopolitics of Automation, in: Matthew Hockenberry / Nicole Starosielski / Susan Ziegler (eds.), Assembly Codes. The Logistics of Media, Durham (Duke University Press), 2021 132-150

- protocols, rather than material hindrance, as "the immaterial groundwork of material infrastructures" = entry "Protocols", chapter "Concepts", in: Brett Neilson / Ned Rossiter (eds.), Logistical Worlds.

Infrastructure, Software, Labour, No. 2, Kolkata (Low Latencies) 2017, 104

- historical economist Harold Innis. Empire and Communication (1950), with focus on the *bias* of communication in spatial and / or temporal channel and transport / storage media; underlying orientation towards conquering either time (alias tradition) or space (alias telecommunication) no metaphysical or social construction, but a function of its material or logistical techniques; is it only with electronic media that communication transcends body-related cultural techniques to autonomous technologies

- techno-(know)lical exchange / the logistics of knowledge economy; case study West vs. China (Needham)

- modelling Chile recursively: Project Cybersyn; PhD research Diego Gómez-Venegas on Stafford Beer's project Cybersyn as self-controlled ("backpropagating", in terms of Deep Machine Larning) "viable" eco-system; failed / deconstructed in the frictions of concrete implementation (apart from the more obvious destruction by the military coup in 1973)

- governement all about controlling society / esp. (nationalized) economy = argument video lecture Stafford Beer, professor of Cybernetics at Manchester University (produced at the Business School) "Cybernetics part 3" Manchester University May 24, 1974, after Chile experience: https://youtu.be/g6Fc3BqcRNU; proposal for Chile: *instant* data flow required; economy data measured every day and transmitted to communication center; diagram: set of nodes, with comm. center (cp. ARPANET); more or less instantaneously by telex

"Old European" vs. Chinese / Japanese / Korean techno-logical attitude

- more direct Japanese attitude to artificiality / technicality, less irritated by epistemic irritations in the old Europen sense / a different philosophy? "AI and Society Series" webinar February 2021 c/o Tomoko Tamari, Goldsmiths College, London *Robotics and Embodiment*

Technológos and / or "terramorphosis"

- techno*lógos* addressing level between materialist "active matter" (Schäffner) and sociological ANT (Latour); technology based on already formed matter (*techné / hylé*), becoming in-formed as logified matter: still from within? activated matter as cultural techniques; techno*lógos* not simply culturally "mediated" (program poster Lash) matter = *Terramorphosis: The Intentionality of Matter* = independet project

(workshop) at Architectual Trienale in Lisboa, October 10, c/o Scott Lash 2022, but more epistemic question concerning materialist emanations of *lógos* in / as technology / closed circuitry

- "terramorphosis" approach still organismic a priori; rather: entanglement of matter with spirit / *lógos*

- "terramorphosis" neologism very close to Techno*lógos* hypothesis indeed, esp. "Architecture from within computing" chapter; still terramorphosis" concept more centered on the metaphor of life and the organic (somewhat in accordance with Bachelard and Jacob) while TL hypothesis more focused on the techno-logical entanglement of logics with / and matter; iconic photo book: Open Circuits: The Inner Beauty of Electronic Components. Autoren: Windell Oskay und Eric Schlaepfer

- still "extension" paradigm, vs. genuine techno*lógos*

- matter (*matrix*) vs. pattern / patriarchive (logocentrism)

- organic / material vs. technically informed matter / energy (radio carrier frequency modulation, e. g.) vs. "active matter"

- focus on patterns instead of algorithm; Chinese non-alphabet / numbers (Shiquiao Li)

- study of being (*ontos*) ontological "what is ...", vs. study of processual artefacts *in being* "what it does"; Jannet Bennet *Vibrant Matter* / Bergson

- biochemical morpho"genesis" vs. computational morphotechnologies / AI pattern generation from noise; ANNs more like second-order "morphogensis"

- epistemology of media developed from within technologies (like scientific material studies)

- whether technologies as such are (en-)active knowledge differenz from physically "active matter" / patterns of activity (*patterning*)

- critique of computational / discrete approach to bio-phyiscal nature: Husserl, *Krisis* - contemporary / contrary to Turing same year 1937 and Heidegger *Weltbild*

- "nature does is all[ready]" = Peter Fratzl

- technology not reducible to pure science; rather: negentropic "cultural" knowledge

- "down to earth" (Ribault) / *grounding* the symbolical regime in

materiality

Giuseppe Longo, Le cauchemar de Prométhée. Les sciences et leurs limites:

- Presses Universitaires de France 2023; replace / additional preface from computational science / machine learning expert admitting the technical aspect of numerical vs. continuous approach (analogue / alternative computing)

- epistemology of the "discrete" scientific approach to physics / matter / biology; rising relevance of "deep" artificial neural nets and doubts about the numerical (computational) approach to the natural order

- technology instead of direct dichotomy between mathematics and nautre: less human-centred, rather objectivations of mind (Hegel) for experimentation

- Longo mathematical philosopher; critique / limits of "digital" computation, while neglecting actual computing, where numbers are not confronted with matter, but enacted as matter itself (electromagnetic relay)

Technology and the "Political"

- totalizing technology being "political in-itself" = Addison Fan, e-communication 5 May 2025

- technology "micro-political" (in the sense of a technically organized assemblage of elementary units)

"Cosmotechnics"? Technology in the Anthropocene]

- anti-technological "turn" in the climate crisis discourse

- claim for a harmonical co-existence of technology and environmental and socio-economic concerns a case of technological romanticism; both rather incompatible

- G. W. F. Hegel insisted on a conceptual understanding of phenomena like electricity in alliance with so-called "natural philosophy" in the epoque of German Idealism and speculative physics; this approach has recently rediscovered in the name of "cosmotechnics" (Yuk Hui)

- for Schelling, "[t]he dialectic of forces in the inorganic realm, specifically the 'construction of matter' out of chemical, electrical, and magnetic forces, must in some sense be contained or be implicit in the organic realm" (Peterson in Schelling, xxviii). "Epistemology and ontology, or form and substance, are kept rigorously distinct" here (= xv); techno-logical in-formatization of matter of a different, intellectual kind; rather mathematics (differential equations), that is: logical operations making technical and physical phenomena (like "resonance") analogical; see Barkhausen, Schwingungslehre;

- H. N. Jahnke, Mathematics and Culture: the Case of Novalis. Science in Context 1991; 4(2): 279-295; https://doi.org/10.1017/S0269889700000971

- developing philosophy of technology inductively from its "grounding" in actual operations, rather than from deductive metaethics of technology like Confucian unity of heaven and man / the four grand forces (*Dao*, Heaven, Earth, and Man), or Schelling's "Naturphilosophie"

- Chinese unifying *Qi* (technical instrumentality) and *Dao* (the superior value of technologies) = Yuk Hui, *Question of Technology in China*

- *Dao*-*Qi* relation "may resonate with *physis* and *logos* (or *logoi*)" = e-communication Addison Fan, 5 May, 2025

TEHNOLOGOS (podcast dialogue Maks Valenčič / W. E.)

["a podcast series exploring the evolving nature of mediation through the lens of computation and information processing", curated / hosted by Maks Valenčič]

- video conference right from inside the Media Archaeological Fundus in Berlin, 6th November 2024, with Ljubljana; initial reference to the specific and real physical location that is not an empty studio (with bookshelves) like for traditional theorists, but a rather media-archaeological environment for techno*lógos* thoughts (with the technical objects themselves preventing philosophical thoughts to become too "speculative")

- plea for a more *transitive* media philosophy / podcasting this dialogue *from within the MAF*, that is: in (occasional) direct contact with the machines

- "instant" media philosophy (in fact new book project) requiring the presence of actual technological devices during the process of reflection - that is why the Media Archaeological Fundus, as location, perfect for locating the podcast spatially

M. V.: Your background is in many ways similar to Kittler's. You started as a classicist, and then became a media theorist yourself. Could you tell me why this was the case, this general migration from literary studies to media theory that happened also with McLuhan and not simply Kittler.

a) McLuhan: literary avant-garde becoming more conscious of the materiality of letters; "medium message" - *ars combinatoria*, down to Transformer architecture for ChatGPT in word (token) stochastics today - different from focus on semantic "content" in literary studies: focus on the symbolical code / alphabet (software) on the one hand, and on the materiality of ink on paper (hardware) on the other

McLuhan: Gutenberg Galaxy the "making of typographic man"; in the 1960s challenge by non-alphabetic, non-literary cultural technologies: not symbol processing ("literature") but signal transduction (radio / television) with its different *medium message*

with Kittler book on origin of vocal alphabet: Kittler's shift from typewriter to alphanumeric code that is still behind the mechanism that mostly appears as audio-visual interface in computing

b) myself rather fascination with "deep time" and difference between textual (historiographical) and materialist presence of ancient cultures; study of classical archaeology, classics and theory of history / interest in temporality of the past inducing shift to media technologies as time-axis manipulation / replacing phenomenoogical time by more precise operations known from engineering like delay, frequencies, recursions

M. V.: Could you talk about your relationship to Kittler's work? First, when did you first meet Kittler?

- Kassel workshops

M. V.: Have you been a student of his or not

- rather independent, never scholarly student relation / meeting point Dubrovnik, Hans Ulrich Gumbrecht *materialities of communication*; anecdote: my postmodern approach on xerox copyingh (the aesthetics of reproduction, the simulacrum, the "loss of the original"), Kittler reminding me to have a look at the machine, which I did in the meantime: the in-between-ontology of the electrostatic text "copy" in latency, to be "developed" like a photographic negative, with an ontology of temporal absence of its own during the copying process, an intermediary state of intermediary memory

- inspired by Kittler, but not in a linear way of teacher / student; rather independent convergence / what is "inspiration": brothers in mind / vivid anecdotical biographical memories, but radically addressing "Kittler now" nowadays in the archival mode: exorcizing the "proper name" ("Kittler") out of Kittler papers (and technical artefacts!) at Marbach National Archive of Literature

- Hegel in between: remember Bochum controvery on philosophy of media history; Kittler: driving force (Hegelian thought)

M. V.: Speak of Kittler's ambition to "outdo" Foucault's historical a priori with a media or technological one. Since this is probably the true start of media science, at least as I see it.

- media *science* rather than "communication studies", with its not-just-humanities cutting analytic edge

- Foucault's only technically concrete discourse analysis: typewriter and its alphanumeric keyboard

x *demonstration objects from MAF:* typewriter / eductional manual typewriting / typographic letters from toy "type case"

M. V.: Differentiation between media science and other departments within media studies. Claus Pias has this wonderful argument where he suggests that media studies shouldn't be understood as a science, but a discursive strategy (no object or method defined in advance), while their focus is on mediality, on the medial conditions of knowledge production itself. So it's interesting within this perspective to think of the project of media science, that problematizes this position in at least some sense. Could you speak of this difference?

- ongoing debate with colleague Pias on this topic: necessity of Media Studies as proper academic curriculum for precise a) technical and b) philosophical knowledge; media-archaeological insistence that "media" not just discursive agency, but technical concretizations of logics (in-formatized matter & energy), just like an INTEL microchip concretely behind apparent non-essential "information" processing (albeit Norbert Wiener)

M. V.: I'm asking also because Kittler himself had a unique perspective on this question, as for him media science should be understood as a replacement of philosophy, as the new metapysics as the first science in the Aristotelian sense. How can we then ground these differences?

- answer literally: "ground" in actual techno-logical analysis ("grounding" a term from engineering as well, for electric voltage to be connected to physical mass / matter) / Walter Seitter reminding of simple fact that Aristotle's books on "Metaphysics" simply indicate his library book order: the books he wrote "after" his more physical treatises on natural sciences

M. V.: Discussed your work with Davor Löffler, sociologist and anthropologist whose work tracks the changes in the generative conditions of our civilizational history at a transcendental level

[Davor Löffler, Generative Realitäten I: Technologische Zivilisation als neue Achsenzeit und Zivilisationsstufe. Eine Anthropologie des 21. Jahrhunderts (Velbrück Wissenschaft) 2019. "Es stehen jedoch keine konkreten Kriterien zur Bestimmung dieser Geschichtsphase bereit"]

x rather: recursions; non-historicist media-archaeological approach

- post- and transhumanism epistemologically obsolete?

- posthumanism (agency, materiality, post-anthropocentrism); biggest obstacle to artificially created (AI-generated) art so far the human = argument Igor Stromajer, presentation at *Net Art - Gallery Surfing Session* ngbk Berlin, 11 December 2025; reference to Frank Popper, From Technological to Virtual Art (2007): "Popper shows that contemporary virtual art is a further refinement of the technological art of the late twentieth century and also a departure from it. What is new about this new media art, he argues, is its humanization of technology, its emphasis on interactivity, its philosophical investigation of the real and the virtual, and its multisensory nature." = https://mitpress.mit.edu/9780262162302/from-technological-to-virtual-art; "many artists, among them John Maeda, Jenny Holzer, Brenda Laurel, Agnes Hegedus, Stelarc, and Igor Stromajer. The biographical details included reinforce Popper's idea that technology is humanized by art. Virtual art, he argues, offers a new model for thinking about humanist values in a technological age." = ibid.

x rather: discontinuous escalations (Foucault, Archaeology of Knowledge) than evolution (Barry Powell's reminder of the sudden "adaptor" of Phenician syllabic to Greek vocal alphabet); rupture from (cultural) techniques to techno-logy; less "historical" model; co-evolution of human and technology like Bernard Stiegler, Techniques and Time

- symbolic patterning / coding: "Die Mathematisierung dieser Modelle macht Wirklichkeiten berechenbar und ermöglicht es, Handlungen einzelner Akteure oder ganzer Kollektive zu planen und punktgenau zu setzen. " = Davor Löffler / Oliver Schlaudt, Was bedeutet der digitale

Wandel menschheitsgeschichtlich betrachtet? Ein Blick aus der Deep History in eine ungewisse Zukunft, https://zevedi.de/category/vrtw-blog/vrtw-author-davor-loffler-oliver-schlaudt, accessed November 6, 2024

- "deep history" still anthropocentric, different from the media-archaeological approach to technological *Eigenzeit* and invariants, like the independent co-intention of the escapement-triggered ("digitized") mechanical clock in Medieval Europe on the one hand, and China during Sung dynasty on the other

M. V.: Löffler said that he has problems with the media scientific privileging of only one layer of abstraction in relation to other, since the abstraction is cumulative and therefore expressed at each level – it can be found in mathematics, economics, philosophy, etc. So what's the rational behind the media archaeological method that dives deep into the media as the purest form of tracking these changes. Why are media for the media archaeological method the foundational level for grounding and understanding these changes?

- somewhat different from Kittler's Hegelianism, technical media not the equivalent to "Weltgeist" as determining the conditions of reality; more specifically, the sphere of encounter between humanly embodied logos and nonhuman matter / energy - the earth / world as "media theatre" in the sense of a processual ontology, with the accent being on the "on" in ontology: not "to be", but "being", unfolding from processuality

M. V.: The questions within your project are becoming increasingly abstract. Could you speak of this development in what kind of questions media archaeological method tracks in each example: from a more empirical engagement with the archive, to an increasingly philosophical and abstract application of the method. From time and radical restructuring of temporality through media technologies at a transcendental level, to technologos that relates to the transcendental changes in abstraction or mediating conditions itself. So you are trying to ground the (radical) media archaeological method in an increasingly fundamental or first principles way.

- "first principle" a basic assumption that cannot be deduced any further, once defined by Aristotle as "the first basis" - in fact: *arché* - "from which a thing is known" / Aristotelean "metaphysics" almost archaeo-logically concerned with fundamental principle (*archai*) of being in reality, such as causality (arché) and form (morphogenesis / in-formation as core epistemic drama of technology as entanglement of symbolic order with mateReal); can substance exist even independent from human cognition: object-oriented ontology / But in reverse to metaphysics, media

archaeology radically turns the relation upside down: not more abstract, but as even more concrete media-philosophical insights derived from close inner-technical inspection, analysis and enactment

M. V.: Changing nature of media archaeology and how it relates to radical media archaeology

- Media Archaeology having become more popular / differentiated in "soft" mode ("historical MA", term by Kittler) / media-artistic MA, such as Paul deMarinis and Gernot Hertz / "variantology" (inter-cultural comparison, by Zielinski) / *topoi* (recurrent media momoment in cultural history, by Erkki Huhtamo); therefore need for specialization: see MEDARCH-RADICAL

- "radical" in the mathematical sense as well: square root; shift towards mathematicity in *computational* media culture / AI

M. V.: Winthrop-Young has you as the last Kittlerian, as the last person who retain or even accelerated this technological antihumanism that Kittler espoused, and that was then revisited by various people within media archaeology, or cultural techniques studies. How do you understand this critique, and what exactly do you find the most valuable in retaining the antihumanist perspective of Kittler's approach?

- actually turning the "antihumanism" of the (middle) Kittler against "himself": treating his legacy not in terms of a hallucinatory human individuum, but as textual configuration of alphabetic letters (on paper) and alphanumeric code (the software he wrote for computing); media-archaeological reminder not to simply *historicize Kittler*; resists historization that relativizes the cutting edge of his approach, even though "late" Kittler re-turned to ancient Greece

M. V.: How do you see the AI as potentially a new framework through which we can understand computation. In some sense, AI problematizes the classical distinctions between hardware and software, in the case of quasi analogical characteristics of neural nets, or with neuromorphic computing, where the hardware is not a passive receptor of instructions, but is already optimized to perform specific type of computation. But specifically the transformation from computer simply passively receiving instructions in a formal language to actually representing them in an immanent way. What you call the key transition in technologos where computation is not about machinic following formal rules, but a mechanisation of mathematics that open a new paradigm for thought as implementation.

- actually, notion of "Techno*lógos*" a hypothesis, like the difference between "weak" and "strong" AI: either treat products resulting from "deep" machine learning as emulation of human and cultural intelligence, or rather: granting this mechanism an intelligence of its own that becomes articulated in its "glitches", errors and artefacts

- still "no software", but in a post-Kittlerean sense: diagrams of "deep" machine knowledge becoming operational in physical "layers" of artificial neural nets / becoming tangible in electronic tube (triode) modelling "neurons"

x *demonstration object MAF*

and graphical processing NVIDIA chips: enabling parallel "neural" processing, originally developed for computer graphics / gaming, different from increasingly outdated INTEL chips for sequential data processing in von-Neumann-achitecture of personal computing

Master thesis Maks Valencic: concepts like micro-temporality, operativity, and technológos / the importance of seeking concepts (or abstraction) within technology itself, and the ways in which thinking is increasingly grounded in technology or, more precisely, computation (abstract)

- rather computation (mathematized machine) as techniques grounded in "thinking": technics becoming technology in the active sense of nonhuman *doing thought* / tec-knowledge (Konradin Leitner *alias* QRT "techno music" philosopher, Berlin)

- techno*lógos* no passive "knowledge and teaching of techniques", but granting them autonomy in the sense of Joost Rekveld's *Dialogues with Machines* (artistic research PhD University of Gent in 2024): chap. "Liberate the Machines!" / revealing the technológos (both hard- and software) behind "emergent" products of generative AI

[quote PhD thesis Rekveld, p. 59: "Earlier I painted the picture of media archaeology as a kind of reaching back in the manner of Husserl, as an attempt to descend to the hidden foundations of the network of machines that surrounds us. But there is also a freedom in these machines that points in a different direction, to alternative ways of approaching these objects that are equally possible. The soundtracks reminded me of that freedom because they are records of the physical presence of these machines. As physical objects, machines are not exhausted by the uses and descriptions that humans make of them. All machines have a potential that is not yet realised, partly because our perspective on them is determined and limited by the place they currently occupy in the network. By discovering new interpretations, that place can be changed and new uses can be found. It is this freedom that

makes interactions with machines and mathematics more than a monologue of the ancients and an actual dialogue with the networks that surround us."]

["... the machine is the stranger; it is the stranger inside which something human is locked up, misunderstood, materialized, enslaved, and yet which nevertheless remains human all the same." = Simondon 1958, p. 9, as quoted in Rekveld 2024: 60]

- "alien phenomenology" (Ian Bogost)]

- need for Media Science (not to be absorbed by Cultural Studies or conventional Communication Studies); abstract Master thesis Maks Valencic: "the need for autonomous conceptual production in media studies, achievable only through the development of a new science of computation." = https://repozitorij.uni-lj.si/IzpisGradiva.php?id=162417&lang=slv, accessed 11 October 2024"

- abstract Master thesis Maks Valencic: "*the ultimate materialization and operationalization of thought: its potential for implementation*" / beyond Hegel / Gotthard Günther: "objectivation of the mind" finally achieved not as philosophical speculation but as experimentable epistemic tools

M. V.: Could you speak some more about technological determinism and in what way media or the changing nature of mediation determine our field of possibilities?

- attention, the condition of possibility for this podcast at all is a technological dispositive, the Zoom videoconferencing hard- and software - the precondition for human reasoning to be communicated across spatial distance - while in the same present - at all

- more fundamentally (the media-archaeological "principal" level): humans themselves *already* (from the co-evolution of human and technique) pre-determined / defined by technology, literally: by *lógos* (araticulated language) as *techné*, and symbol manipulation (a. k. a. writing / reading)

M. V.: In your recent essays, you show why the question of implementation is so important for understanding the key difference that happens with technologos as informationalized matter, i.e. that the real constraints (thermodynamics, etc.) become the crucial aspect for understanding the nature of abstraction and how it's being implemented. This is what I term as mediation being operationalized itself, as now we are getting closer and closer to finding out the "true" conditions of possibility of mediation, what can be mediated in the first place.

- indeed, e. g. in Artificial Neural Nets: technical implementation (both hard- and software) fundamentally different from bio-logical "embodiment" of brain operations

- critique of term "medialization"; *mediation* always already more concretely

- dichotomy between "software" and "hardware" (Kittler) maybe the primary sin of information theory; rather equiprimordial entanglement while at the same time not being one - kind of "Hegelian" question ("house ghost" of MAF here and now)

ENHANCING THE "ERROR". A TECHNO-LOGICAL HERESY

- close analysis and critical reflection of the medium specificity of techno-logical malfunctions against the ontology of "error" mandatory for media theory and philosophy of technology. In the German academic field, the discipline of technically oriented Media Science (in its autonomy from rather journalistic Communication Studies) emerged in a time when humanities liberated themselves (in the name of post-structuralism and deconstruction) from the hermeneutic imperative in the 1970s and 1980s.

- Jens Schreiber, Stop Making Sense, in: Computer als Medium, ed. Norbert Bolz, Friedrich Kittler, and. Georg Christoph Tholen (Munich: Fink, 1994), 91–110

- went hand in hand with a reevaluation of the role of "noise", as it had been declared in the theory of communication engineering itself

- "error" irritating the symbolic order of systems by exposing its frictions. Instead of following the text-philological "correction" imperative, current media-archaeological thinking takes the notion of "error" to media-epistemic shores; qualification "erroneous" deriving from the hermeneutic tradition within humanities; computation Humanities, media-theoretically redefining such terms

- "error" not simply exterior to the (symbolic) machine neither can it be reduced to malfunctions of actual software implementation; rather already inherent in the symbolic order itself: co-originally as reminder of the *principal incompleteness* of technical reasoning (esp. in computation)

- in computational theory, the digital computer as symbol-processing machine (Krämer 1988) without awareness of an accident since it always calculates due to its programming. But the actual computer is not manipulating symbols but transducing signals and therefore rather

knows noise than errors. The very notion of error is affirmative to the symbolic regime: philology rather than engineering. There is no pure Turing machine (computation), but always already computing: implemented into media-active matter (hardware) and thereby inviting for the true coincidence as (mate-)real to intrude and irritate its ideal order.

- in computational theory, the digital computer as symbol-processing machine not provided with awareness of an accident since it always calculates due to its programming. But the actual computer is not merely manipulating symbols but transducing signals and therefore knows noise.

- in the symbolic machine, any breakdown still relegated to its conceptual program; against this functionalism, media archaeology radically investigating what forms of tec-knowledge emerge from the moment of breakdown. While disorientation refers to system logic (a mechanism), the very notion of "error" needs to be renegotiated with respect to its actual (mate-)realization.

"Errors" in the Presence of Noise

- media-archaeological attention for "errors" resulting from a different understanding of *lógos* in the very term "technology". Traditional hermeneutics seeks to uncover hidden layers of meaning in (first of all biblical) alphabetic texts; alphanumeric source code in computation, though, is pure syntax. The identification of "error" still affirms the regime of sense-making; it does not admit a negation of logic in terms of noise as *alógos*; scriptural regime (the order of characters) opposed to signal analysis (such as spectrograms); let "errors" creatively take place in the age of signal processing with its electrodes and (algo-)rhythms

- "error" only arising from the syntactic order of the machine; in a materialistic definition of the technical medium, the logocentrism of "error" replaced by a multitude of more precise engineering terminology for operational malfunctions

- possibility of undesired error is conceptually inherent in computational science as opposed to conceptual uncertainty (such as encryption). = Weaver 1963: 19; in communication engineering and cybernetic aesthetics, even distortions possible sources of information; media artist Bill Viola's naming a video recording resulting from an "aberrant electronic nonsignal" passing through a video switcher *Information* (1973) = Viola, as quoted in: https://www.eai.org/titles/information, accessed 22 May, 2025

- digital coding once introduced to decisively improve the "analog" signal-to-noise ratio, making noise itself treatable as "error" - an

incorporation into the symbolic regime; digital computing "intolerant of error or ambiguity" and "depends upon error correction at every step along the way." Analog computing, alternatively, "tolerates errors, allowing you to live with them" = George Dyson, The Third Law. The future of computing is analog, in: Possible Mind. Twenty-Five Ways of Looking at AI, edited by John Brockman, Penguin Press, 2019; quoted from https://medium.com/s/story/the-future-of-computing-is-analog-e758471fbfe1, accessed February 25, 2019

- all technology being matter encoded by cultural knowledge. Its *langue* may be diagrammatics and mathematical logic, but its *parole* is electro-technial circuitry.

- epistemological curiosity rather than hermeneutics driving media archaeological investigation. Electro-physical action cannot be misunderstood; all technology material artefacts, encoded by cultural knowledge: its *langue* diagrammatic and mathematical logic, but its *parole* electro-technial circuitry

- subhermeneutic media archaeology

- error detection resulting in a heuristic, temporary suspense from the hermeneutic imperative; the media-archaeological moment for "errors" to become articulate

- computational glitch (if not simply reduced to media-artistic surface effects) "exposes the innards of software" = Anna Blumenkranz, Glitch Art. Challenging the Myth of Perfect Software (30 April 2012), https://www.academia.edu/17370875/Glitch_Art_Challenging_the_Myth_of_Perfect_Software (accessed 17 Mai 2025), p. 3; innards "the essence" (Heidegger) of technique

- "errors" opening the gap (between ideal form and actual matter) from where technology articulates itself. It is not for correction but for epistemic curiosity that media archaeology listens to techno-*lógos* as different kind of language

- rebooting of hermeneutics in a different, medium-specific sense: "understanding" nonhuman agencies like "errors" both as symblic algorithms or (mate-)real machines, granting "errors" a symptomatology of epistemological dimensions that questions the symbolic order (mind) by intrusions of the (mate-)real (corporeal cognition / electrified matter)

Error's Two Bodies: Hard- and Software

- typographically differentiating notion of the "techno-logical" error referring to the technical (hardware) and logical (software) levels of

malfunctions; technical hardware malfunctions only becoming manifest *in being*: that is, processual media *erring* instead of static "errors".

- Charles Babbage developing his Difference Engine to avoid errors in human calculation / printing of mathematical charts (Prony's logarithmic tables); his "mechanical notation" for symbolically testing a calculating machine without having to actually build a real test model calculating machine by handicraft, to avoid errors which take place in manual copies of machine design = Campbell-Kelly 1989

- "All discretization techniques present the possibility of roundoff errors or instabilities creating undetected artifacts in simulation results." = Winsberg, E. (2003), ‘Simulated Experiments: Methodology for a Virtual World’, Philosophy of Science, 70: 105–25 (120)

- possibility of error "an inherent part of the coding process"; its occurrence asking for a logical (rather than material) feedback, "contributing to enhanced functionality" in the hermeneutic tradition of alphabetic text improvement = Blumenkranz 2012, p. 1

Redefining the "Artefact"

- in electrified "digital" times, the previously material notion of the "artefact" being redefined; logical errors (which differ from technical noise) in digital image or sound processing called "artefacts", or "glitches"; a "digital error" an oxymoron, since the apparent malfunction, in terms of techno*lógos*, rather a function, and articulation, of the operating system which thereby makes itself "legible as out-of-the ordinary" = Morgan, C. (2019), ‘Calculated Error: Glitch Art, Compression Artefacts, and Digital Materiality’, APRJA, 8 (1): 204–217 (205)

- in the epistemic media theatre, "the machinic accident might be understood a spectacle of the machine's operational logic" = Morgan 2019: 209; errors still "making sense" in terms of an inverted techno*lógos*; technical computing not only logical but physical as well: not just abstract algorithms but their actual implementation in technically pre-informed matter, resulting in the fusion of machine and mathematics; media-archaeological attention focusing on the time-critical moments of interference between physical matter and logical coding, such as the materialized glitch; the notion of the pure reasoning machine itself deconstructed by erroneous technical materiality; such moments of the techno-real emerging from within the computational machine itself, as an intervention against the reduction of computation to an ideal symbolical regime

- techno-logics not simply an enforcement of the symbolic code upon organized matter, but matter itself induced to release its inherent

patterns like the electron flow in the silicon chip; the unexpected in digitality arising "from the material operativity of coding […] where an abstract code is always in need of being concretely doing something, even simply of dysfunctionally disrupting itself" = Parisi, L. and S. Portanova (2011), ‘Soft Thought (in Architecture and Choreography)’, Computational Culture. A Journal of Software Studies, 1 (November), http://computationalculture.net/article/soft -thought; by erroneous code-as-doing operational software becoming an unexpected, therefore "informative" source of novelty in the computational process

"Typos" in printing

- typographical errors (misspelled words or misplaced marks) for long times a form of self-fulfilling techno*lógos*, of the symbolical (alphabetic) regime materialized in distributed letter sets; hermeneutics replaced by materialized operational statistics: misprints arising from within the printing pres; have been cultivated by random poetry

- in printing, mistakes made during the typing process that have been missed by editors and proofreaders; "typos", from as less anthropocentric perspective, media-archaeologically reminding rather of the idiosyncrasies of typesetting as machine than of human misconception. = entry "typo", https://www.vocabulary.com/dictionary/typo, accessed 20 May, 2025

- from the earliest times of a truly technical medium, the mechanistic book print, the "error page", known to list, after the (printing) event, apparent mistakes in the regime of alphabetic letters that occurred during the translation of the manuscript (as cultural technique of human handwriting) into a symbolical machine operation. The foundational figure of media theory in a strict sense, Marshall McLuhan, though, turned this function upside down in his notorious enhancement of the apparent typesetting error of medium "massage" instead of medium "message" in his graphic book with designer Quentin Fiore; this typographical slip of tongue in fact articulating the true medium message of the mechanism of the printing press itself. = Marshal McLuhan / Quentin Fiore, The Medium is the Massage. An Inventory of Effects, New York (Bantam Books) 1967

- considering the productivity of "errors" as knowledge chance known from the theory of information itself; in a disastrous "typo", a German translation of Claude Shannon's "Mathematical Theory of Communication" (*1948), the central diagram confused the role of "noise" (interfering in the transmission channel or "medium" between sender / encoder and receiver / decoder) replaced by "information", thereby missing Shannon's central point: the medium materiality (which

the digital code was meant to beat) always interferes in communication. = in: Axel Roch et al. (eds.), Claude Shannon, An / Aus, xxx

- errors in the symbolical regime (software) no disaster of the signal on the material medium level (hardware) but its chance of additional information value in terms of improbabilities; cp. "noise" as parasitical in the biological sense of symbiosis = Michel Serres, Parasites, xxx

Erring Hardware

- repair of damaged computers starting with techno-mathematical "error" research on both levels of computing: its hard- and / or software; defect no deficit / lack but essential to technology itself: a reminder of the irreducible physicality of techno-logical reasoning; from the perspective of a media theory "by other (non-textual) means", the repair act not simply functional but can be media-archaeologically transformed into an epistemology of technical reason = Stefan Höltgen & Marius Groth: Wissens-Appa/Repara/turen. Ein epistemologisch-archäologischer Werkstattbericht von der Restauration eines frühen Mikrocomputers, in: Krebs, Stefan, Schabacher, Gabriele and Weber, Heike. *Kulturen des Reparierens: Dinge - Wissen - Praktiken*, Bielefeld: transcript Verlag, 2018, 239-264 (esp. subchapter "Historische Computer als epistemische Dinge", 257-261 (257); https://www.degruyterbrill.com/document/doi/10.1515/9783839438602-010/html?lang=de

- catalogue of the Ars Electronica festival in Linz 2018: Error. the Art of Imperfection", ed. Gerfried Stocker / Christine Schöpf / Hannes Leopoldseder, Berlin (Hatje Cantz) 2018

- repair act as such, if not simply understood instrumentally but as transient media-philosophical reflection in real-time, revealing hidden knowledge aspects - the techno*lógos* - of the device itself; the leakage of an electrolyte condensor connected to the power supply of an Apple Macintosh (1984) once destroying the embedding of the CPU on the circuit board - the logical unit - irrepairable; media-epistemologically this leading to one the most ancient debates in Occidental philosophy (and theology): the relation of spirit (logic, intellect, mind) to matter (materiality, body); while the circuit design and programming of digital computers usually ideally focusing on the pure reason of logical gates, the difference of metamathematical computation to actual computing its electronic embodiment; energy supply no simply precondition for logical operations any more but becoming integral part of its originary logical design; the "bit" always already impure since it takes time-critical energy to switch from zero to one, and to supply an electric bias for the operability of the computer at all; tracing a hardware "error" therefore questioning familiar ontology

- figure: Apple-Mac-Batterieschaden.jpeg

- techno*lógos* not simply a variance of (technical) reason, but of a specific different kind: *impure* logos; silicon as basic matter for electronic semiconductors no brute, but already technically purified ("error-freed") matter to become informatizable techno-logically (cultural / mental abstraction from materiality still inherently bio-materially "embodied" itself)

There is no "Error" in Techno-Logic

- accidental media laboratory errors (Oersted) giving rise to technical discoveries (once perceived with epistemic minds)

- the nonhuman, machine-focused perspective necessary to be suspended from the otherwise hermeneutic notion of "error" or "misunderstanding"; phenomenal "errors" in fact always *making sense* in techno-logical terms (both hard- and software)

- "Eine der Möglichkeiten, wie ein technisches Ding Fragen aufwerfen kann, ist, wenn es defekt wird." = Höltgen / Groth 260

- tool failures revealing its essential being as technique. Error-free media operations actually hide their technical essence against the human user

- "thing knowledge" in tools; not only scientific instruments carrying "epistemic weight" = Davis Baird, Thing Knowledge. A Philosophy of Scientific Instruments, Berkeley / Los Angeles / London (University of California Press) 2004, 29

- "accidentalal" media laboratory events (like Oersted's detection of the entanglement between electricity and magnetism) frequently triggering technical discoveries (once perceived by epistemic minds)

- a tool error (such as the failing hammer) revealing its essential being as technique = Martin Heidegger, Being and Time (German original 1927), trans. John Macquarrie and Edward Robinson, Oxford and Cambridge, MA: Blackwell 1962, 98; such articulations of the technically informed (mate-)real "errors" only in the instrumental perception of techniques; error-free media operations actually hiding their technical essence against the human user that become evident ("unconceiled") only in the moment of disruption. = Heidegger, Martin [*1927], Sein und Zeit, 11th ed. Tübingen (Niemeyer) 1967, 68 seq. and 73 seq.

Frictions

- articulating a different logic "by other means": with frictions arising from the actual implementation of logical diagrams or computational source code as real electronic circuits and computing, the physically real articulating itself against the symbolic order = See Ernst 2021: 92; in fact no pure techno*lógos*.; its defectiveness is essential and demands to be *principally* included, *en arché*

- frictions that occur when an idealized technical diagram (or code) is implemented in the (mate)real of technical media

- role of "errors" in technology essentially differing from its role in the textual hermeneutics tradition of humanities. "Humanities of the Digital" (the media-epistemic back side of Digital Humanities) revealing an alternative logics (techno*lógos*).

Letting Error Articulate: Media Philosophy "by other Means"

- technological "errors" media-active (but implicit) reasoning (theory) “by other means,” as a kind of fragmentary think(er)ing (Huhtamo), foregrounding otherwise concealed tec-(self-)knowledge

- errors in technology never erroneous themselves, rather hinting at a different logic that is embedded in technical circuits: an autonomous *media thinking* in the active sense

- "media thinking" in Herzogenrath's sense

- media archaeology granting technological devices the capacity to emit "other" (non-hermeneutic, rather technical and techno-mathematical) elect(ron)ically: sparks of implicit media-t*heoretical knowledge by themselves*. So-called "errors" are such enunciations of the technical "real" against the logical "symbolic". To be recognized as such, though, it still take human reasoning to turn such implicit articulations into explicit knowledge; such a media-epistemic insight revealed not in "theoretical" distance (ancient Greek *theoría*) but from immediate "transitive" experience: from mere tinkering to "thinkering" media" = Huhtamo, Erkki, 'Thinkering with Media: On the Art of Paul DeMarinis', in: Paul DeMarinis: Buried in Noise, ed. by Ingrid Beirer, Sabine Himmelsbach and Carsten Seiffarth (Heidelberg and Berlin: Kehrer, 2010, 33–46

- simply "theoretical" observation of technical media missing their operative element that is articulated by "errors" *in being*.

- on "blindness" in tool (media) usage: Heidegger 1927 / 11th ed. Tübingen 1967: 69

"Bug" and "Glitch" in their Epistemic Dimension

- notorious first "bug" in digital computation reminding that "errors" in computing cannot be reduced to logical malfunctions of programming; always a material / energetic interference of the (mate-)real into the symbolic (in Lacan's terms = Lacan, J. (1991), Psychoanalysis and Cybernetics, or on the Nature of Language [1955], in J. A. Miller (ed.), The Seminar of Jacques Lacan. Book II: The Ego in Freud's Theory and in the Technique of Psychoanalysis, 1954–1955, 294–308, New York (Norton)

- errors replacing the occidental ontological dichotomy between hard- / software (body / mind, matter / sprit) by its entanglement (not merging)

- "bug" (moth) detected between relay contacts in the MarkII computer on September 9, 1945: Stefan Höltgen, Sprachregeln und Spielregeln. Von Computerspielen und ihren Programmierfehlern, in: Christian Huberts and Sebastian Standke (eds.), Zwischen / Welten. Atmosphären im Computerspiel, Glückstadt (Hülsbusch) 2014, 295-315 (298) / "debugging"

- on difference between errors, bugs, and glitches: Stefan Höltgen, From Bugs to Features. An Archaeology of Errors and/in/as Computer Games, in: 2021, Korolkova, Maria / Barker, Timothy (eds.), Miscommunication: Errors, Mistakes, and the Media. London: Bloomsbury Publ. 2021, 265-283

- apparent software "glitches" fully logical from the inner-technological perspective of the digital machine; "faulty" only from human, semantic-oriented view

- more precisely defined in engineering than in its aesthetic exaggerations, the computational "glitch" a time-critical distortion of the signal output in logical gates (its "race condition"), to be differentiated from the literal "bug"

- in computer archaeology, "bugs" medium-specific. "When a computer program transforms a universal Turing machine into a specialized Turing machine, errors reveal a dysfunctionality that can only occur in the hardware-software compound of the (real) computer." = Höltgen 2021, 267

- "bug" that Grace Hopper found on September 9, 1945 has actually been a moth, trapped between the contacts of a Mark II computer relay: "a problem of the hardware functionality, not of the hardware itself" = Höltgen 2021: 268. "*Programming errors are different from these*" (ibid.); only the human hermeneutic interpretation of the output that defines the operation as inaccurate = 267

[Enhancing the "Error": Media-Aesthetic Dimensions of "Glitch Art"]

- term *gesteuerter Zufall* coined by Max Ernst = "controlled randomness" (Blumenkranz, p. 9)

- intentional and staged form of computer errors in so-called glitch art = Höltgen 2021: 255

- "glitch art's full conceptual capability can only be unfolded when it operates from the inside of the software" = Blumenkranz p. 11 / in reality no ideal computation; evolving as an essential substance the *medium*-specific "space in-between" = Blumenkranz, p. 9

- "glitch art": looking like a heretical abuse of technology at first sight; in fact a media-specific insight in terms of philosophical epistemology; media-artistic challenging / summoning of the error directing attention from apparent media content to the actual "message" of technology in sense of McLuhan 1964, chap. 1

- "How to Datamosh Videos", http://datamoshing.com; "glitch" art in computational media an original occurrence differing from previous art forms as cultural techniques; Peter Krapp, Noise Channels. Glitch and Error in Digital Culture, Minneapolis / London (University of Minnesota Press) 2011

- media-materialist data moshing not simply arbitrarily deconstructing the supremacy of the symbolic regime of binary logic (source code). True "random" can only be derived from the physical sphere = Nikita Braguinski, RANDOM. Eine Archäologie elektronischer Spielzeugklänge, Bochum / Freiburg (projektverlag) 2018; physical circuit bending allowing the hardware to interfere, revealing that software is always already bound to technified matter = Friedrich Kittler, There is No Software, in: Stanford Literary Review vol. 9, no. 1 (Spring 1992), 81-90

- errors from within software (not just its aesthetic surface simulation): "[I]n order to challenge the idea of perfection, artist need to get inside the machine instead of imitating it." = Blumenkranz 2012, p. 5

x *materialist* glitch art not simply affirming the supremacy of the symbolic regime of binary logic (source code) by arbitrarily deconstructing it, by allowing the hardware to interfere, revealing that software is bound to technified matter = Friedrich Kittler, There is No Software, in: Stanford Literary Review vol. 9, no. 1 (Spring 1992), 81-90

- data bending and circuit bending (such as the Speak & Spell electronic toy) close to "random" = Nikita Braguinski, RANDOM. Eine Archäologie elektronischer Spielzeugklänge, Bochum / Freiburg (projektverlag) 2018; Speak & Spell educational itself for phonetic error-correction, but thereby at the same time revealing the gaps between artificial and natural voices (in times before the Large Language Models as applied in "AI" machine learning nowadays; electronic device capable of imitating human speech by means of an electronic model of the vocal tract - that is, by mimicking the acoustic properties of the glottis or the mouth; driven by an algorithmic chain of commands and interactions, and backed by a database of utterances that have been analyzed into their smallest building blocks, this device raising a generation of children able to spell "correctly" according to the current norm; at the same time helpful to understand the often difficult-to-decipher electronic voice

- network-based music (a)synchronization / delays (Kenneth Field)

- the momentum of "errors" (dis-)appearing in moments, or as processual chain? "Error" diffusing into a time series

- "error" only from human (phenomenal), not inner-technical perspective

- difference between media-phenomenology of "error" and its technical "truth" in the Heideggeran sense as unveiling / revelation (ancient Greek *aletheia*)

- artistic sensorium as "radar" (McLuhan) for such deviations

- assemblage of techn(olog)ical artefacts in the MAF and Signal Laboratory at Department of Media Science, HUB, granting direct ("transitive") confrontation / short-circuit between media-theoretical competence and "objected-oriented" media experience; from errors in actual media-"thinkering" that the objection (even "veto") of the technical (mate-)real against its idealized abstraction into pure theory occurring

Knowing how to get lost: Erring instead of "error" identification

- mail program frequently classifying e-mail requests as "Junk"; such "mal"function still techno-logically rational, due to probabilistic decisions and offsets by message filter

- "Error 404" message indicating that the requested page is missing or has been removed, "leading to a dead end for the user" = web site Lenovo, https://www.lenovo.com/us/en/glossary/404-error/?orgRef=https%253A%252F%252Fwww.google.com%252F; possible counter-strategy *learning to get lost* within the labyrinth of errors (after Benjamin, *Berlin*

Childhood) to derive sparks of knowledge from deviation: one must "lose oneself in the city as in a forest," which "requires training" = Walter Benjamin: Berliner Kindheit um neunzehnhundert. Sonderausgabe mit einem Nachwort von Theodor W. Adorno, Suhrkamp, Berlin 2010, entry "Tiergarten]

- according to Karl Popper, science proceeding from disproving erroneous theories rather than approving the right ones = Robinson, Derek (2008): “Function.”, in: Software Studies. A Lexicon. Fuller, Matthew (ed.), Cambridge, Massachusettes / London (MIT Press), 101–109 (109), as quoted in Blumenkranz p. 12; relevant for media *science* as well

- Derrida's neologism of *destinerrance*: The Post Card. From Socrates to Freud and Beyond, trans. Alan Bass, Chicago and London (University of Chicago Press), 1987

- case of a "logical" artefact deriving from erroneous programming that ends a computer game due to a misplacement of an object: game Tom Thumb (1986); Fig.: Tom-Thumb-Glitch.gif. Due to an error in programming, "[...] the sublimity of this game setting turns into disillusionment when, after playing halfway through the game [...] an error occurs, finishing the gameplay long before the end of the game" = Stefan Höltgen, From Bugs to Features. An Archaeology of Errors and/in/as Computer Games. In: Korolkova, Maria / Barker, Timothy (eds.), Miscommunication: Errors, Mistakes, and the Media. London: Bloomsbury Publ. 2021, 265-283 (266, Figure 16.1), http://txt3.de/bugs

- an iterative sprite collision of the character with a hostile element

- from a media-epistemic perspective, this error revealing,eEven if this problem could be "corrected" by just a BASIC "POKE" command: "[T]he program does not stop because of it; it stays within a code fragment (within a loop) eternally - it shows the halting problem every Turing machine is threatened with [...]." = Höltgen2021: 271; http://txt3.de/bugs

- computation not "aware" of logical errors except on its foundational (media-archaeological) level: the algorithmic "undecidability" challenge; according to Gödel's theorem, "in any sufficiently powerful logical system statements can be formulated which can neither be proved nor disproved within the system" = formulation Turing 1950 / Beatrice M. Fazi, Contingent Computation: Abstraction, Experience, and Indeterminacy in Computational Aesthetics, London: Rowman & Littlefield (2018). "The computer itself cannot “recognize” (calculate) that the result of the collision detection routine in this specific loop leads to an eternal repetition." = Höltgen 2021: 271

- programming "error" identification only revealed *ex post* from technical

medium *in being*: "The graphical labyrinth of the game semantics is not comprehensible at whole—neither for the computer nor for the programmer—which provoked an error that only could be detected in retrospect." = Hölten 2022: 271

- media-archaeological recursion: with Claude Shannon in 1952 presenting his *Theseus* epistemic toy to the New York Macy Conference on cybernetics, the audience confronted with an erring rather than error: "When he constructed his labyrinth, he detected situations in which the mouse 'Theseus' went to the same four positions of the labyrinth over and over. Beneath the surface of this labyrinth (built into its technical subface), four relays detected and steered the direction of the mechanical mouse. In this particular situation, four of these relays directed the mouse into a feedback loop, where the first led it to the second, which led it to the third, which led it to the fourth, which led it back to the first relay. Where the surface shows a mouse that runs in circles, the subface produced a circuit of relays in which inputs got connected to the outputs as in an electric circuit. Shannon detected the error after the labyrinth had already been constructed, by testing it (a runtime error), and named it “singing condition" = Höltgen 2022, 271, referring to Shannon cit. Pias 2003: 474 f.; one participant in the discussion at the Macy conference actually coining this behaviour "neurotic"

"Error" in / as AI

- "errors" becoming media-epistemic symptoms in "deep" machine learning (a. k. a. Artificial Intelligence); enhancing them actually enlightening AI in terms of critical explainability

- error essential for AI not as a defect but as a condition; advising "to include a random element in a learning machine" = Turing 1950, chap. 7 "Learning Machine"

- on the other hand, necessity to introduce arbitary errors into an AI-enhanced computer game, in order to give the human still a chance not to lose in permanence = Stefan Höltgen, Signals & Noises. Das Signallabor an der Humboldt-Universität 2012-2022, in: journal 4. Ausgabe der Zeitschrift „Spiel|Formen. Zeitchrift für Play & Game Studies“ no. 4 (Mai 2025) special issue "Game Lab", 271-xxx (271) https://spielformen.net/index.php/journal/issue/view/5/8

-more than just gaming but a way of media-epistemic *thinkering* (Huhtamo): *Adversarial Hacking in the Age of AI* = title of workshop organized by consortium "Künstliche Intelligenz und Medienphilosophie" (KIM) at HfG Karlsruhe, in cooperation with transmediale festival *End to End*, 29 – 30 January 2020, at Medientheater / HU Berlin Media Science

- in "deep" machine learning: cybernetic paradigm of negative feedback = David Rumelhart, Geoffrey E. Hinton and Ronald J. Williams, "Learning representations by back-propagating errors", in: Nature vol. 323, 9 October 1986, 533-536

- error function evaluating the prediction of the model by feedforward and error-correcting backpropagation operations

- not unlike its role in human psychoanalysis, errors symptoms of a displaced unconscious / indications of AI's internal logics: hints that keep the different techno*lógos* of AI *explainable*.

- revealing a techno-mathematical subconscious (Freudian "it") of tec-knowledge at *in being*; depending on the kind of data, in signal-as-data processing, occasionally a program's behaviour turning out as unpredictable even to its author; a micro *alógos* unfolding; algorithm, as an abstract mechanism, losing / loosing its ideal substance-independence, once coupled to physically acting matter, or a mass of unstructured data in "deep" machine learning; in artificial neural nets, a dynamic system of (still numerical, though) "weights" replacing the conventional logical order of the symbolic machine; certainty getting replaced by probabilities, binary "truth" values becoming stochastic, but still *lógos* in such computing; "error" arising as category just from the human, not from machine view

- core AI operation still familiar from (negative) "feedback" in cybernetic system theory: "We compute an objective function that measures the error (or distance) between the output scores and the desired pattern of scores. The machine then modifies its internal adjustable parameters to reduce this error"; adjustable parameters called weights: "real numbers that can be seen as 'knobs' that define the input–output function of the machine." = Yann LeCun / Yoshua Bengio / Geoffrey Hinton, Deep learning, in: Nature 521, 436–444; 28 May 2015, published *online* 27 May 2015

- in Generative Adversarial Nets, "errors" in the generative model corrected by an adversarial process (the "discriminator"). "In the case where *G* and *D* are defined by multilayer perceptrons, the entire system can be trained with backpropagation"; in fact "no need for any Markov chains or unrolled approximate inference networks during either training or generation of samples" = Ian J. Goodfellow et al., Generative Adversarial Nets, arXiv xxx, "Abstract"

Artificial Intelligence and "Deep" Machine Learning

NOTES ON ARTIFICIAL INTELLIGENCE AND "DEEP" MACHINE LEARNING

- (inner-)technological intelligence - as techno*lógos* - different from "AI" as anthropocentric effect

- core issue of how the critical and precarious economic und humanitarian conditions of current AI as "product" relates to the micro-materiality and techno-epistemics of AI as technology: Frankfurt School focus and / or radical media archaeology, technical "aesthetics" with(out) Adorno etc.

- media-archaeological approach to AI not softening AI / ML practice in discourse analysis, but rigidly trying to cover the mechanism / machine behind the more phenomenal aesthetic implications; chapter 14 of Techno*lógos (*2021) devoted to criticism of a certain "metaphysics" in AI discourse; rather"explainable" AI

- allowing for unrestricted "phenomenotechnical experimentation" with AI tools

- David Barry, paper "Humanities and Artificial Intelligence" (read at Warwick in 2023), on applied AI in literally archaeological and philological conjectures of broken material or defect textual artefacts from antiquity - not in any lofty speculative philosophical sense, but in the mathematical tradition of Jacob Bernoulli's *Ars conjectandi,* in "a redefinition of human existence under the sign of a chance" = Hans Christian von Herrmann, xxx; Carl von Clausewitz, in his 1832 treatise On War (Vom Kriege), using the physical concept of "friction" to refer to the fact that modern war, with its complex processes organized in space and time, is "everywhere in contact with chance" and therefore produces "phenomena" that "cannot be calculated at all" = von Herrmann, referring to: Carl von Clausewitz, Vom Kriege [1832], Bonn (Dümmlers) 1991, 262 - by AI / ML?! "With thermodynamics and its statistical models, however, the "mathematical formalization of the Chaos of old" = Friedrich Kittler, Signal-to-Noise Ratio [1988], in: Disruption in the Arts: Textual, Visual, and Performative Strategies for Analyzing Societal Self-Descriptions, edited by Lars Koch / Tobias Nanz / Johannes Pause, Berlin / Boston (De Gruyter) 2018, 347–361 (357) was soon to move onto the scientific agenda" = von Herrmann 2023 (197); cybernetic premise "not the assumption of an equality of essence, but an observation and description procedure [...] by which living beings and machines were entering into a new relationship of close proximity" = Hans Christian von Herrmann, Epilogue: The Cybernetic Revolution, in: Diego Gómez-Venegas (ed.), FRICTIONS. Between Cybernetic Thinking and its Attempts of Mate[real]ization, Lüneburg (Meson Press) 2023, 195-202 (198)

- trained artificial photoelectric "retina" stimulated and "weighted" according to Donald Hebb's neural stimulation model; alphabetic

character recognition like in Rosenblatt's Perceptron around 1960 allowing for a mathematical modeling of such neural activity; unsupervised Machine Learning now advanced to recognizing hidden patterns in big data banks which are to huge for human "intelligence" to be figured at all (in both senses, both military reconnaissance and mental activity)

- European "Transputer" for massively-parallel data processing in early computer graphics (vector imaging)

- adversarial increase of error rates in machine learning systems; discovering deep learning's literal "blind spots" and "what escapes the algorithmic eye" = panel abstract; hiding one message in another (steganography); notion of *Adversarial Hacking in the Age of AI* = workshop organized by consortium "Künstliche Intelligenz und Medienphilosophie" (KIM) at HfG Karlsruhe, in cooperation with transmediale festival "End to End", 29 – 30 January 2020, at Medientheater / HU Berlin Media Science; still remaining within the thinking of AI / reinforcing the strengths of the technological regime in the sense of Baudrillard, Es gibt keine Medientheorie, in: idem, Cool Killer (Berlin: Merve); alternative: *asymmetric* warfare against AI: no alternative technology, but (non- or inner-Western?) alternatives to "technology" as such

- "machine vision" extension of *Suchbilder* claim; "subtractive" imaging, starting from a noisy image vs. additive *gestalt*; combining texture images with image content; adding artificial constraints for low frequency representation which can be recognized by humans, vs. high frequency "noisy" information in AI images; resist privileging the image-centered phenomenomology of machine learning in favour of sonification; Heidegger's "Zeit des Welt*bilds*" in its mathematical sense; output "image" from machine learning already optimized by filters to enhance shapes / regularization; implicitly privileging human perception and "image" cognition

- "XAI" claim: techno-mathematically, and epistemologically at the same time; the question of explainability - to humans, or rather: to (other) machines

- media-archaeologically advisable to "ground" XAI analysis from the (meta-)symbolic algebraic formulation over verbal description and diagrams down to the encoding of actual (but pre-formated) material signal processing and "reasoning"

- "opening the black box" still appropriate for XAI? no "mechanism" any more but (big) data-dependent processuality, probabilistic rather than logic, non-linear, still "causal" but based on circular negative feedback operations (original Macy conference proceedings title)

- experiments in "radical" media-archaeological approaches to AI, technically and logically accomplished in exhibition Technological Grammars (July 2024) in the Signal Laboratory of the Department of Media Science at Humboldt University of Berlin

On the "X"plainability of Artificial Intelligence

- media-archaeological assumption of "hidden" metaphysics in AI / ML discourse / semantics itself a hermeneutic gesture; rather: "implicit"; can non-hermeneutic analysis only be achieved by another machine, such as in adversarial neural nets (GANs)

- "x"plainability itself the question: on what level to be "explained"? media-archaeological triple claim: electrophysical layer / operative diagram / mathematical algebra, against discourse analysis of conceptual design

- *human* desire for analytic explainability (itself an epistemological effect of vocal alphabet, with McLuhan): "Künstliche Intelligenz: Resultate endlich erklärbar für Menschen" = title of note Stefanie Terp, https://idw-online.de/de/news821715, entry October 4, 2023

"Memory" vs. Markov chains in artificial (voice) data training

- "Deep" Machine Learning (AI) deductive from "social media memory" / massive data acquisition / harvesting (no "archive"), thereby revealing "social / cultural memory" (Halbwachs) itself as a circulating data construct

- GANs not based on massive data storage / "memory" any more; rather Markov chain model (immediate "past" / probabilistic prediction / *futurum exactum*); discrete state machines (Turing 1936 / 37); "memoryless channel" (Shannon); no demand for massive data repositories / "digital archives any more

- Markov chain incorporating transistion probabilities / stochastics: "a sequence of neither purely random, nor purely deterministic transitions from one state to any other in a system" = International Encyclopedia of Systems and Cybernetics, ed. by Charles François, Munich (Saur) 1997; Markov source (mth order) "an alphabet of events in which the probability of occurence of a given number of the alphabet is a function of the m preceeding occurrences" (K. Sayre, 1976: 29); Markov process based on symbol (rather than: signal) sets

- cp. concatenative speech synthesis: same phoneme sounding different depending on previous / sequential one; apply Hidden Markov Model (developed in speech recognition first and the applied to speech synthesis) / Viterbi algorithm

- deep learning: statistical domain, no phonetic theory: system extracts features directly from data, rather than statistical / archival listing

- HMM step between; from HMM to Deep Neural Network

- different logics of the archive: a) model-based reproduction logic; voice stored in the code, mimicking human behaviour; b) corpus-based database logic (concatenative synthesis): voice stored in micro-archives / sound samples and then "operationalized" c) machine learning: abductive logic (Peirce); voice stored in big archives used as training data sets, from which statistically rendered new voices, finding optimal output by approximation = Domenico Napolitano, lecture *Artificial voice. A media-archeological investigation of the speaking computer from model-based synthesis to deep learning*, colloquy *Media in our Sense*, HU, November 20, 2019

- cp. Max Bense / Harig, Monologue of Terry Jo

- "Incomprehensible utterances by the machine express its innermost mind" (Tomomi Adachi 2014) / techno*lógos* arising from the machine

- in AI "learning" meaning "sorting", "classifying"; statistics (in the absence of knowledge) rather providing a corrective to the machinic propensity towards exactness - rather stochastics? *alógos* as ultimate techno*lógos*

- correlationalism vs. causality; algorithmic (the non-existent) vs. reproduction of the existent

- unsupervised learning input without annotations; networks extracts its own features through statistical classification automatically - no logocentrism / metadating

- generative adversarial networks: generator creating fake samples from mix of latent space data plus noise: Shannon positivized; discriminator (from real samples) learning to tell apart fake data from true data (fine tune training)

(A)Imaging the MAF

- let image generator / AI tool like Midjourney recursively invent its own origin in Turing machine / imagination of Enigma (as shown in exhibition

New Realities. Stories von Kunst, KI und Arbeit, Museum für Kommunikation, Berlin, April 2024); ML media archaeology resulting in de-formed and re-combined technical devices, seen from their photorealistic appearance, not understood as their code / circuitry; would AI become "intelligent" once (re-)creating a new techno-logical function

"Thought in the act" (Menning / Massumi)?

- concept of "embodied thought" still logocentric; instead alternative operative / diagrammatic reasoning / circuitry; techno*lógos* no abstraction but materially implicit form of knowledge

- in the sense of cybernetic machine model and Searle's "weak AI" model (the "Chinese room" metaphor): an insect occasionally crawling, during a sunny day, across a printed page of, e. g., Martin Lang, Wittgensteins philosophische Grammatik. Entstehung und Perspektiven der Strategie eines radikalen Aufklärers, Den Haag (Nijhoff) 1971; not hermeneutically understanding, but still "reading" in the sense of *legein*: differentiating between dark and bright spots (character and line spacings)

"Journey to Faremido" (Frigyes Karinthy)

- science ciction of "machine intelligence" from the intellectual sphere of pre-computational modernity, making the postmodern media-archaeological reader feel close and distant at the same time; World War II escalation from "organical" machine to technological mechanism / techno-mathematization making the difference

(A)Irony in last chapter *Transitive Media [Philosophy]*

- "[…] coupled to the medium, the transitive philosopher becomes medium itself. It is up to the reader (human or non-human) to speculate whether this thesis has been generated and formulated from a customized AI chatbot that has been trained by the big data archive of media-epistemic texts (including the present treatise)." vs. initial book data (front matter) "Without limiting the exclusive rights of any author, contributor or the publisher, any unauthorized use of the contents of this publication to train generative artificial intelligence (AI) is expressly prohibited."