"POSTING" DIGITAL PRESENCE: A MICRO-TEMPORAL REGIME

[Key-note lecture at BFX (Bournemouth Visual Effects and Animation) academic conference "ANALOGUE TO POST-DIGITAL", Bournemouth University, September 25th -26th, 2015]

Introduction

I WE ARE NOT "POST DIGITAL" - NOT YET

"Post-digital" media culture? Sustaining a critical philosophy of algorithmically driven technologies
The sublime presence of ubiquitous computing
The re-entry of the "analogue" in the "post-digital"

II IRRITATIONS OF "PRESENCE"

A core of the operation: sample-and-hold
The difference between analogue and digital in terms of synchronization
From natural movement to the un-natural in its chrono-photographic reproduction
Different tempor(e)alities
Digital culture - a micro-archival regime
The "moving still"
Sampling the visual present: The moving still
Archiving the present and re-presencing the past
Instant recording of the present

Introduction

Shall we really think in terms of "from analogue to post-digital?" Any "postism" already suggests a *temporal* vector, a linear, almost teleological evolution. My lecture will first express a critique of such chrono-logic historicism. If there is something like the "post-digital condition" of current media culture, it has resulted in non-linear chronopoetics which has replaced the emphatic sense of history itself in favor of micro-archival reverberations. From a genuine media-archaeological point of view, the relation between analogue and (post-)digital media is not a progressive one in cultural time, but a complicated interrelation.

Computer-based culture gets progressively used to non-linear figures of tempor(e)ality, as known from computer programming itself: the "GO TO" jump order in algorithmic source code, and other figures likes iteration, loop, and recursion.

It is this "post-digital" tempor(e)ality which deserves close analysis in a constructive sense. The second part of my paper will

therefore deal with the micro-temporal features of the the "post-digital" condition which result in almost imperceptible, fundamental irritations of the sense of the present. The technical core of such operations of sampling the visual present is the sample-and-hold mechanism for converting analog signals into digital bits. From that arises a discussion of the difference between analogue and digital in terms of synchronization, with a focus on natural visual movement and its un-natural chrono-photographic reproduction.

Instead of concentrating on the discursive or narrative effects of current media practices, let us rather focus on the sublime human perception of the "present" induced by non-discursive micro-technological zones of indeterminacy between the analog and the digital, esp. the moving image and its sonic equivalents.

I WE ARE NOT "POST DIGITAL" - NOT YET

"Post-digital" media culture? Sustaining a critical philosophy of algorithmically driven technologies

Let us, first of all, resist the seductive historicism of our conference title which is suggested by the adverbial trajectory *from* analogue *to* the post-digital. In many media-archaeological ways, the digital image has preceded the analogue one (just think of Alexander Bain's telegraphic image transfer already in early 19th century).

The "Editorial" of the Post-digital Research journal APRJA provides a working definition of the *post-digital*:

"Post-digital, once understood as a critical reflection of 'digital' aesthetic immaterialism, now describes the messy and paradoxical condition of art and media after digital technology revolutions. 'Post-digital' neither recognizes the distinction between 'old' and 'new' media, nor ideological affirmation of the one or the other. It merges 'old' and 'new', often applying network cultural experimentation to analog technologies which it re-investigates and re-uses. It tends to focus on the experimential rather than the conceptual"[1]

- which nowadays results in an explosion of emergent "labs" in digital humanities.

The current discussions on the "post-digital" remind of the former debates on the "post-modern". Against the post-isms, Jean-François Lyotard, in *The Postmodern Condition*, rather defines the "post" as enhancement, not as "beyond". If in that sense "postmodernity" did not represent a new age, but rather repeated essential features of

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1 Issue 3.1 (2014) on *Postdigital Research*; see www.aprja.net

modernity[2], let us rather re-think the "digital" than dismiss it too early. It takes time to confront the challenge of the digital epistemologically. The fact that in unbiquitous computing the digital seems to have become part of everyday culture - just like listening to music from an MP3-Player introduced complex compression algorithms into popular culture - does not mean that contemporary culture has already digested the shock of digital electronics invading the analog world.

There is a "law of media" (Marshall McLuhan) which says that when the experimental initial era of a "new medium" (where it is still consciously media-archaeologically experienced and reflected by the users) is being transformed into a mass medium, no the techno-logical message of the medium recedes behind its semantic and cultural "content". After "the digital" has been culturally ingested and become an everyday commodity with ubiquitous computing, we are not yet "post-digital" but - in analogy to traditional radio and television - we are in a "mass-digital media" age. The digital, though, still needs to be media-theoretically and epistemologically to be "ingested" (Freudean *Durcharbeiten*) - which requires hard-edged techno-mathematical analysis of processual algorithms (radical media archaeology). The focus of my argument is therefore *not* on the term "post-digital" how it is used in the discourse of digital artistic practice which serves as a kind of tranquillizer for humanities: "It points to an attitude that is more concerned with being human, than with being digital."[3]

McLuhan's posthumously published manuscripts on media time under the title *Laws of Media* are a kind of a media theoretical equivalent to Hayden White's seminal *Metahistory*. According to McLuhan, there is a chrono-logical (not simply annalistic) figure of how technical media unfold in cultural time indeed: First - in its media-archaeological incubation - the new technology (such as cinematography or video, or the phonograph whose material presence receded behind the loud-speaker) itself is subject of attention and avantgardist experimentation; after a time of cultural accommodation it becomes a simple commodity and the focus shifts from the medium's message to ubiquitous content.

Significantly, one of the uses of the term "post-digital" developed in the sonic context. Kim Cascone coined and uses the term in his article "The Aesthetics of Failure: 'Post-digital' Tendencies in Contemporary Computer Music"[4]; this referred to the glitch, to circuit bending, to "media archaeological" research

2 Anne Elisabeth Sejten, Exhibiting and Thinking: An Anamnesis of the Postmodern, in: Yuk Hui / Andreas Broeckmann (eds.), 30 Years after Les Immatériaux. Art, Science, Theory, Lüneburg (meson press) 2015, 159-178 (168)
3 http://en.wikipedia.org/wiki/Postdigital; accessed May 11, 2015
4 See http://subsol.c3.hu/subsol_2/contributors3/casconetext.html (accessed May 12, 2015); originally published in Computer Music Journal 24:4 Winter 2002 (MIT Press)

art.

Nicholas Negroponte declared "The digital revolution is over" at MIT Media Lab in 1998.[5] In his version of the "post-digital", Cascone directly referred to Negroponte's manifesto in his analysis that "the revolutionary period of the digital information age has surely passed" <Cascone 2002>. Indeed, when the media-archaeological incubation phase is over (experimenting and experiencing a technological invention), the technical *a priori* becomes a black box in favour of aesthetic interfaces.

But inbetween is techno-locigal formats and "apps". Here not the complex medium apparatus as such is the message like with radio and television before; rather, their specific electronic affordances and software tools themselves have become the *sub-mediatic* message. It is tools such as Max, SMS, AudioSculpt, Pure Data, and other that make possible "post-digital" music" (Cascone) which is characterized by micro-sonic, almost DNA-like operations.

As has been demonstrated by Martin Heidegger with the human use of the hammer as tool already, it is only from the failure (and noise) of a technology that the medium articulates itself:

In a couple of other new media art works as well, the "post-digital" primarily refers to the re-entry of the physical existence and that into "the abstractness of the digital world"[6]. But then, is it only the hardware-oblivion of most digital media users and theorists which leads to this recent discovery that even the most immaterial and virtual mediascapes radically (that is: on the media-archaeological level) ground in ultimately analog electro-physics. The "bit" has always been (and still is) nothing but an extreme articulation of the continuous - from the conceptual "digital" back to the analogue.

The sublime presence of ubiquitous computing

In his book *The Computer for the 21. Century* (1991), Marc Weiser predicted ubiquitous computing: "Specialized elements of hardware and software, connected by wires, radio waves and infrared, will be so ubiquitous that no one will notice their presence."[7] In other words: Digital media transform into a *sublime* presence - sublime in Edmund Burke's and Immanuel Kant's definition of a sensation of something which is there but can not be figuratively imagined by

5 Nicholas Negroponte's seminal essay "Beyond Digital, in: Wired 6 (12), 1998;
  http://www.wired.com/wired/archive/6.12/negroponte.html
6 As quoted in: http://en.wikipedia.org/wiki/Postdigital; accessed May 11, 2015
7 http://wiki.daimi.au.dk/pca_files/weiser-orig.pdf, as quoted in: http://de.wikipedia.org, entry "Postdigital", accessed May 11th, 2015

humans.[8]

This reads like a counter-historical recursion of the first "digital" writing system in culture: the vocal alphabet, which in the first generation had been subject of media-critical attention (Platon, *Phaidros*), but then became cultureal everyday practice, so that writing and reading hermeneutically shifted from the awareness of signifiers to a focus on semantic content.

All the more the media-archaeological veto is required, a kind of *katechon* ("beholder") as defined in the 2nd epistle of apostle Paul to the city of Thessalonike: The task is to defer public oblivion of the techno-mathematical conditions for articulations in so-called digital culture.

The re-entry of the "analogue" in the "post-digital"

The discourse of the "post-digital" is useful when it helps to get rid of the simplistic use of the adjective "digital" which is confused with binary computing - whereas "digital" cultural techniques are as old as culture itself (counting with fingers, vocal alphabet, Morse code).

The "digital" has been at work already in alphabetic writing and the cinematographic frame sequence. The "analogue" media came inbetween: photography, phonography, electro-magnetic broadcast media (radio, television). With computing, the digital returns; in techno-mathematical terms, the numerical ("digital") signal analysis in the frequency domain is the inverse value ("Kehrwert") of the analogue wave form in the time domain.

Media-temporal loops happen in insular modes, different from media-historical emplotment of technological evolution. The alphabetic code corresponds with telegraphy, against which telephony (analogue signal transmission by electric transduction of the human voice) intervenes. But with "voice over IP", even telephony returns as digital communication.

As a critique of historical dicourse, I have trouble with terms like the "post-digital". Each *postism* affirms the narrative plot that technologies are being invented, they emerge, they florish, they end, to be succeeded by another technical dispositive.

The term "post-digital" is meant to express that media culture has entered a stage where the digital as such is not an object of newness and excitement any more since in everyday life, in academic practice and in media art it has become common to work interactively. I still insist that the digital challenge, even if

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8 See Jean-François Lyotard, The Sublime and the Avantgarde, in: xxx

practically "ingested", has not yet been epistemologically and critically digested and needs ongoing media-archaeological distancing reflection.

We might be "post-digital" in the sense of everyday usage of media, but when we stay aware of NSA data surveillance tools, we certainly still have to critically investigate the algorithmic digitality and tempor(e)ality.

On the phenomenological side, it is true that communication culture has become "post-digital" insofar as computational algorithms imbedded in mighty processors have become so efficient that most humans are not even aware of the discreteness of digital events (be it sound, be it vision, be it communicative interaction) unless a momentary breakdown of real-time processing happens – which leads to a common confusion between "live" (as affective experience) and "real-time" (as its technological condition). On the level of physiological perception the "analog days" return – but just as a time-continuous simulacrum, dissimulating its time-discrete and micro-archival nature of intermediary storage. In that sense, the storage-programmable computer (the "von Neumann architecture"), coupled with predictive algorithms (the "future in the past" mode of temporalizing presence), is the technology to be focused.

The core of the operation: The sample-and-hold mechanism

Claude Shannon's canonical sampling-theoreme describes the digital ratio of the "slicing" of a continuous signal flow in order to preserve the signal fidelity intact. The current notion of "streaming" media in online access to audiovisual content metaphorically disguises the discrete nature of signal processing and linear buffering.

In Jim Campbell's media art installation *Church on Fifth Ave* (2001), a matrix of 32 x 24 (768) pixels made out of red LEDs displays a pedestrian and auto traffic scene in New York from an off street perspective. A sheet of diffusing plexiglass is angled in front of the grid. As the pedestrians move from left to right the figures gradually go from a discrete representation to a continuous one – or metaphorically from a digital representation to an analog one.[9]

Let us understand the message of this installation in the media-epistemological sense. Once being subject to algorithmicized signal processing, any "analogue", apparently continuous representation of an event is irreducibly discrete - which shows up in the very artefacts ("glitches") the "post-digital"

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9 See
   http://www.jimcampbell.tv/portfolio/low_resolution_works/fifth_a
   venue/church_on_fifth_avenue/

aesthetics is so fond of. This is noticable on the margins of the Campbell QuickTime Movie itself. The analogue here becomes a retro-nostalgic re-entry *within* the digital.

Human perception tends to smooth dicrete data into coherent signals anyway, since it functions as a kind of digital-to-analog converter, when confronted with the pixelised image resolution - just like in mechanical cinema frame sequences and analog television scan images already.

Epistemologically, the digital infinitesimally approximates the physical world. But the perfidious power of "the digital" unfolds with Digital Signal Processing, since this allows to simulate the "worldly" analog signal in high *temporal* fidelty - like physical modelling does with instruments in electronic music.

Between the analog and the (post-)digital a techno-mathematical operation reigns. Any periodic wave signal - be it auditory in the time domain or a visual pattern in space - can in reverse, by means of the Fourier Transform, be numerically addressed in the frequency domain and thereby becomes accessible to computing intelligence.

In times of communication technologies which are based on the Sampling Theoreme, the human sense for the difference a natural and an artificial sound or movement fails. Digital computers have become capable to successfully re- the voicing of the analogue world.

Media archaeology looks at terms like the "digital" not on the level of social practice and cultural discourse, but rather locates the scene where it precisely happens. The interval between two binary states is (electro-)physically "analogue" - but this interval literally *does not count*. What is definitely analogue is the time it takes *between* switching from zero voltage to high level; Spencer-Brown's term "draw a disctinction" is a time-critical act itself. Norbert Wiener once coined this by the enigmatic expression "time of non-reality".[10] Every digital device, in its physical media-archaeological essense, remains ultimately analogue in the temporal sense.

Luciano Florodi, describing the phenomena of ubiquitous computing and the "Internet of things", sees "[t]he threshold between *here* (*analogue*, *carbon-based*, *off-line*) and *there* (*digital*, *silicon-based*, *online*) <...> fast becoming blurred <...>. The digital is spilling over into the analogue and merging with it."[11] This actually extends to the temporal dimension: "[T]he very distinction between online and offline will disappear."[12] Indeed, Global Positioning Systems calculate a position in space as a

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10 xxx
11 Luciano Floridi, Information. A very short introduction,
   Oxford / New York (Oxford UP) 2010, 16
12 Floridi 2010: 16

triangulation of signal runtime differences - space becomes a function of time-critical communication. "Radio Frequency IDentification (RFID) tags store and remotely retrieve data from an object and give it a unique identity, "like a barcode" <ibid.>. Thereby the material present is coupled to the archive already.

From natural movement to the un-natural in its chrono-photographic reproduction

The *temporal* quality of the "analogue" is the time-continuous signal which differs from the "digital" time-discrete impulse. Mechanical cinematography has always already been dissimulating its digitality in a quasi-analogous perception by the lazy human optical apparatus, with the effect of "natural" reproduction of movement. The audience once reacted to Eadweard Muybridge's chrono-photographical analysis of movement with reservation: It was perceived as un-natural.[13] This unease was later philosophically expressed by Henri Bergson who defined the cinematographic movement as the false impression of time.

Muybridge's and Marey's chronophotography technically performed the Aristotelean definition of time as numerical measurement of movement against the phenomenological philosophy of time (St. Augustin, Husserl). Movement became time-critical by mechanical analysis: The *tempo-real* moment of recording - sublimely below human perception - undermined the traditional symbolic order of narrative time.

In its "analog days", inside the cinematographic camera (resp. the projecting apparatus) operates the clock mechanism, including a form of mechanical *escapement* which became essential for the "binary information digit" as so-called "hindrance" (materially the electro-magnetic relay) in Shannon's logical circuit diagrams.

Cinematography *integrates* continuous time in 24 frames/sec. and thereby mechanically performs Leibniz' infinitesimal calculus as approximation by numerical discretization.[14] The "analogue", apparently continuous signal is pre-digital in the sense of its implicit mathematicity. Analogue movement becomes digital as "movie". Current "post-digital" culture is nothing but the application of such being in the physical world - when by Fast Fourier Transform the speed of technological simulation happens in real-time.

Different tempor(e)alities in digital culture - a micro-archival regime

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13 See Zglinicki 1979: 176
14 See McLuhan, Die magischen Kanäle, Dresden / Basel 1994, 238

According to Negroponte's 1998 analysis, one of the features which will endure and remain from the digital age will be a different definition of time - notably immediacy, the "now", the instant. "Post-digital" temporality is anything but "historical" any more. Let us focus on the analysis of "augmented presence" in the current culture of moving images - and its implicit "sonicity".

The 16mm and 35mm film frame in traditional cinema relates to the pixelised new media imagery indead. Digital culture, when analyzed from the perspective of storage theory, is an ongoing "moving still".

This does not only refer to contemporary digitally computed images (since the digital computer in its von-Neumann-architecture can not but perform one step at a time), but happened within the discrete frame mechanism of the cinematographical apparatus already - whereas analogue signal recording media like electronic video registers even stillness by "moving" scanning lines (which is the physical nature of the time-signal). We remember from the anlog video "still": When striking the video recorder "pause" key, the resulting "still image" still flickered, since the cathode ray tube had to re-write it again and again.

Mechanical cinematography belonged to the digital regime already while the phonograph has been its radical alternative - which leads to a configuration of media which is different from the familiar history of technologies.

The technical recording of the immediate present has been a phenomenon of media culture since the shrinking exposure times of classical photography and cinematography, before electro-magnetic waves were applied to transmit signals with the speed of light. But different from "live" transmission in analog electronic radio and television, digital communication happens in "realtime" which suggests instantaneity but - when viewed under a time lense - is a process of constant micro-archiving of data for further processing.

[Whereas analog electronic broadcast media like radio and television have been "live" indeed in terms of electro-magnetic signal transmission, digital data processing is "archival" per definition: it takes intermediary computation ("real-time"). Digital media culture is an archival structure - though a micro-archival one, the "algorithmic archive".]

With digital culture, for the first time, we are really living in an archive culture - not in its institutional sense but in terms of micro-archiving algorithms which dominate digital discourse.

Post-digital present: The "moving still"

The human sense of the temporal present is irritated by the cinematographic "moving still" - when continuous, "analog" passing time is being recorded in discrete "digital" frames or even arrested. The static or stationary shot, while the recording camera is still moving the reel, dissolves the dichotomy between "still" and "moving", resulting rather in a trichotomy of *imagenesis*: Stillmoving / Still / Moving."[15]

Let us here pay attention to the difference between *presence* and *the present* in the chrono-technical sense of what Walter Benjamin once termed *Jetzt-Zeit*.

The digitally animated photographs by David Claerbout (as presented in his gallery exhibition *Still (not) moving*[16]) blur the difference between the present and the past, and evokes the notion of the *undead*. Here, a "post-digital" tempor(e)ality is being evoked.

There is a dramatic epistemological difference between the "analogue" electronic (video) image which as an effect of the cathode ray tube unfolds in time itself, as opposed to the cinematographic image where its still frames are externally moved by the apparatus.

Any media archaeology of "movement" is based in the close analysis of its material apparatus.[17] It is the intermittant drive which is the condition of possibility (*arché*) of the kinematographic effect (and micro-temporal affect, the "presence shock").

Digital (still or animated) images are "images" no more but alpha-numerically coded texts composed by hexadecimal symbols (the "technical image" as defined by Vilém Flusser[18]). Any digital image can be printed out as "dump file" matrix.

In a variation of Alan Turing's definition of digital computation[19], this introduces *discreteness* into movement and at the same time *smears* the present, resulting in a "post-digital" hybrid of the analogue.

Media-archaeological research is not about the "true" nature of

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15 Abstract to the lecture "Still Einstellung: Stillmoving Imagenesis" given by Jon-Inge Faldalen (PhD Candidate, Department of Media and Communication, University of Oslo) in the research seminar *Medien, die wir meinen* at Humboldt-University, Berlin, May 7th, 2014.
16 January / February 2014, gallery EIGEN + ART Lab, Berlin
17 For a brilliant example see Willy Merté, Die Grundlagen der Kinematographie, in: Naturwissenschaften Bd. 7, Heft 25 (1919), 435-443
18 See Vilém Flusser, Into the Universe of Technical Images (trans. Nancy Ann Roth) [*1985], Minneapolis (University of Minnesota Press) 2011
19 "Treat time as discrete": Alan Turing, xxx

time but rather unfolds the operative processualities of technical media in combination with neurological signal processing within humans. All of the sudden, the transcendental notion of "time" implodes into a multitude of events.

But maybe the present (just like "the continuous") might not be the real (in the sense of physical reality) but itself be metaphysics when compared to what actually happens microtime-delayed and / or discretely.

In post-digital times, we experience the present always already as temporal simulacrum. "Practically, we perceive only <...> the past gnawing into the future"[20] - which requires a neuro-sensational "cache" memory (in the full sense of the intermediary storage device in the Central Processing Unit of high-speed digital computers).[21]

What is described here as a temporal horizon is "predictive analytics" in algorithmic computation, allowing for mathematical intelligence to become operative. Media archaeology focuses on the identification and description of such micro-media-dramaturgies.

When the thick layers of moving image technologies are being un-covered, media practices fragment and multiply the apparent floating time. Rigid analysis sharply insists on identifying such moments of sudden disruption and discontinuous mutation, which is the techno-temporal reality behind the apparent "post-digital" smoothness in computing.

Instant recording: Archiving the present and re-presencing the past

From the oscillation between the affective illusion of continuous movement and the parallel knowledge that this is being technically achieved by radical cinematographical or digital discretisation arises a zone of indeterminacy between the digital present and "post-digital" presence.

Archiving the present in real time take place in web-based formats of radio and video as so-called "streaming" media. The old metaphor for the flux of time dissimulates the radically bit-discrete character of buffering data and the time-consuming complex calculation.

Instant micro-archiving of the present is conceptually and technologically implied in the real-time processing of data, as a digital time-discrete sampling and quantizing of moments from the

20 Henri Bergson, Matter and Memory, transl. N. M. Paul / W. S. Palmer, New York (Zone) 1991, 150 [as quoted in: Doane 2013: 94]
21 A suggestion by Jan Claas van Treeck (Media Studies, Humboldt University, Berlin)

present signal - a punctualisation and mathematisation of the continuous event. This requires fractions of intermediary short-time storage of data. The concept of real-time communication, time-sharing and "interrupt" for user input in computing dislocates the metaphysics of the pure present to micro-deferred presence.

A whole scale of micro-temporal "archiving presence" thereby unfolds, starting from ultra-short intermediary storage of electronic equivalents to zero and one in registers and flags, up to time axis manipulations after the digital sampling or recorded signals.

The media form of the analog present, for the longest time in 20th century, has been the notorious "live" transmission of signals by electro-magnetic waves. By means of digital sampling, data compression and real-time computation (the "digital" equivalent to "live" transmission), news media manage to achive the "live" effect even under digital conditions - a "post-digital" effect. But in news radio channels, glitches frequently betray that the audience is dealing with digital re-play. What appears like actual news broadcast, by mistake (when the news speaker activates the wrong icon on his digital control panel) a message which has just been spoken is repeated again. All of the sudden (and as a shock for the temporal authenticity contract between listener and radio station) it becomes apparent that there is not direct live transmission any more, but digital sound files sampled and stored on the sublime micro-level - a presence which is always "archived" already. The present event and storage merge into one with the temporally augmented digital.

The proverbial photographic moment has always been a paradox: from the moment of the photographic click (which in itself, at close reading, is never punctual but a shrinking interval), the present is transformed into endurance. Analog archiving of the present is nowadays being matched by the "thickening of the present moment" in digital systems[22] - a kind of micro-archival bubble.

With its instant digital recording, the present becomes immediately addressable and thus transforms into an implicit, sublime archival structure. By instant digital recording in real time, the present looses its metaphysical uniqueness before it even happens. The present no longer is granted time to take place, and instead is replaced by digital post-presence.

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22 Timothy Barker, Time and the Digital. Connecting Technology, Aesthetics, and a process Philosophy of Time, Hannover, New Hampshire (Darmouth College Press) 2012, 194