

HOW TECHNOLOGOS “RESPONDS” TO WHAT USED TO BE CALLED “IMAGES.” A MEDIA-ARCHAEOLOGICAL RESPONSE TO THE “QUESTIONNAIRE ON THE CHANGING ONTOLOGY OF THE IMAGE”

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LIBERATING THE IMAGE FROM ITS ANTHROPOCENTRIC DEFINITION

“Traditionally we think of images as [...] delimited phenomena that in one way or the other appear to the human mind and apparatus of perception” (Questionnaire). The choice of words in the Questionnaire is indicative already. When optical physiology and cognitive image sensation—from the “analogue” *camera obscura*-like eye to the almost “digital” signal-computing brain—is observed closely,¹ image processing within the human turns out as, indeed, a function of an “apparatus.” Sigmund Freud’s nonmetaphorical concept of the psychic “Apparat” in chapter VII of his *Interpretation of Dreams*² explicitly compares the preliminary stages of imaging to the microscope, or to photography.³ The mechanistic approach reemerged in protocybernetic research into the electrical circuit simulation of neural image perception.⁴ The human “mind and apparatus of perception” (Questionnaire) literally became a nonhuman machinery in Rosenblatt’s computational Perceptron, liberating the “image” from its physiological anthropocentrism.⁵

Machine vision, so far, stayed profoundly different from human image cognition. But technical images as outputs from Artificial Neuronal Nets start to challenge, and to emulate, the human imaginative potential, once they are not only trained by human tagging, but (in a more complex way) by rivalling machines among themselves which are fed with big data derived from “social media.” Just like Gottfried Ephraim Lessing, in his 1766 treatise *Laokoon*, had almost identified the aesthetic properties of the visual arts as parallel perception (*aisthesis*, in the Aristotelean sense) of coexistent units in space, today, it is no coincidence that “deep” machine learning takes place in parallel graphics processing units (GPUs) that were originally developed for image processing in computers. Artificial Intelligence does not simply mimic human image perception (even if Van Gogh-like paintings

produced by AI are gimmicks, according to contemporary discourse), but more profoundly, it challenges the narcissistic view that humans are the only beings able to develop a semantic sense of imagery. The outputs of Artificial Neural Nets (such as the Self-Organizing Maps), which are predominantly images, remind the human of the technicity of his, or her, image perception itself.

THE “NETWORKED IMAGE”: TEXTUALITY, LITERALLY

The current “intensification of what we might call the networkedness of the image” (Questionnaire), from a media-archaeological point of view, is an externalization of the inherently “textile” essence of technical image production.⁶ The technical image within media-archaeologies has already been networked from within, both materially and logically: as a tissue, which became techno-logical in Jacquard’s programmable loom. The general theme of the Dutch Electronic Art Festival in Rotterdam in February–March 2003, “Data Knitting,”⁷ reminded of this first proto-digital “image” production in France around 1800, which soon afterwards provided the model for data processing in Charles Babbage’s design of a first programmable computer.

RE-ALPHABETIZING THE “IMAGE”: PIXEL ANALYSIS

A mathematical, computationally defined image is an arbitrary and physically improbable (therefore negentropic) configuration of picture elements. The pixel as the smallest conceivable *digital* picture element makes sense in an iconic way only when appearing within a group. Digitizing images is technocentric. “I want to take control over every pixel,” media artist Andreas Menn once expressed in his experimental film about digital images titled *Workout*.⁸ From here, new options for searching *with(in)* engines emerge: visual search with precise targeting down to each pixel in an image. Such an analysis can be set in motion by a sorting algorithm, which step by step deconstructs the image’s iconological meaning by rearranging the pixels according to color similarity values. The *Searching Images* project website expressed this by an enduring flash animation.⁹

It is not the high resolution of an image that is crucial for its digitized reproduction (or rather: transformation), but its addressability at every discrete pixel element. This is a non-social approach, since it ignores the discursive implications of, for example, the painter’s intention. With digitization, what has belonged to the Humanities so far, becomes algorithmically “inhuman.” Electronic face recognition identifies schemes, not

individuals. Once translated into computable numbers, the memory of art from the cultural past invites for algorithmic analysis, such as pattern recognition (aka “style”), in amounts previously unattainable for a single scholar.

MACHINE VISION, AND ITS COLD (MEDIA-) ARCHAEOLOGICAL GAZE

In its escalation from passive “analogue” telecommunication to algorithmicized “digital” intelligence (in all senses), the age of electronic signal transmission, storage, and processing, has resulted in “a proliferation of machine imagery that operates independently of human perception and cognition” (Questionnaire) indeed. What cultural aesthetics used to call “image” so far, radically transforms into a techno-mathematical image function. Such technically operative (rather than bodily performative) images have become “images without a social goal” (Questionnaire). They relate to the “cold media-archaeological gaze” instead.

The cold camera-eye gaze of *televisionary* media relates to media-archaeological aesthetics. Friedrich Nietzsche’s “pathetic distance” in philosophical analysis insists on the exteriority of analysis, as opposed to hermeneutic empathy. Even more rigorously, this corresponds with Ernst Jünger’s aesthetics of detachment as a mode of perception created by optical technology.¹⁰ The image searching software of the company Cobion in Kassel, Germany, for example, once crawled the Web for pornographic child abuse images—this task could have been painful for humans, but not for the machine.¹¹ The media-archaeological gaze is *cold* in McLuhan’s sense of differentiating between “hot” and “cold” media—with the latter ones inviting a human receiver to participate actively when putting visual signal streams into relation(s). When media themselves become active archaeologists of data, the cold gaze of the machine is no longer an empathetic vision but an optical element in cybernetic feedback systems.

Does it make sense at all for media theory to metonymically apply the category of the human gaze to machine vision? Dziga Vertov, in his film *The Man with the Camera*, makes the camera-eye (the KinoGlaz) an agent of vision. In Alfred Hitchcock’s film *The Birds*, at one point, the camera switches to the birds-eye perspective from above, making the whole scene look completely different. But the overall perspective in this film is, technically, that of the camera “eye” which is still an analogy to human panoptic

perception. In techno-mathematical systems, however, the notion of *seeing* itself becomes metaphorical. In their processing of optical inputs as data, signals are radically abstracted. In such technologies, ‘command,’ ‘control,’ ‘communications,’ and ‘intelligence’ converge. Cruise Missiles are guided by *mapping* prerecorded visual coordinates with what is actually perceived, like in GPS for navigation, where topological data, rather than images, are communicated. Such operative images are hardly even “images” any more.

Media-archaeological “vision” in fact corresponds with the aesthetics of technical image reading. The scanning beam itself is an actual archaeologist here, as in the case of detection of underwater traces of ancient monuments. The search for the wreck of the ocean liner *Titanic* has been a true instantiation of such a submarine archaeology. While the gaze of the camera is able to search for pure evidence (in the sense of remotely sensing data), the human eye immediately confounds the visual impressions with imagination when it comes to “re-presencing”¹² such relics. “Out of the darkness, like a ghostly apparition, the bow of a ship appears [...] just as it landed eighty-four years ago,” reads the screenplay of James Cameron’s *Titanic*, as the film director recollects his experience of the submarine search: “Initially [...] I was like the astronaut who experienced the moon as a series of checklists and mission protocols”—the true archaeological gaze. But “at a certain point I abandoned ‘the plan’ and allowed the emotional part of my mind to engage with the ship. It made all the difference in the world.”¹³ The gap between visual knowledge and historical imagination seeks to replace archaeological evidence by historicist reanimation, the navigation of data—by hermeneutic empathy, just like sonar echoing in submarine archaeology becomes cultural *resonance* within humans. But let us not confuse data with imaginative vision. Sometimes the iconological, cultural, or historical knowledge of image contextualization can hinder an operative insight.

FOR A PHENOMENOLOGY OF MEDIA VISION FROM WITHIN TECHNOLOGY

Even if human visual impression is still the essential purpose of most image technologies, the actual events of optical signal transduction and digital signal processing remind us of a completely different inner-technological insight into what an “image” is (or does). Its specific configurations reveal a different kind of *media* phenomenology.

Media archaeology looks at digital images not iconologically, but technologically. The “cold archaeological gaze” recognizes the digital image format as border-defined functions of data manipulation, once they have been sampled into the digital regime by analogue-to-digital conversion,¹⁴ or when they are born algorithmically. Images thus become calculable, rather than narratable.

Media archaeology addresses the technical aspects of the image, that is: “as medium.” But even the term “technical image” is actually misleading, since technology does not know images in the human sense. Let the image be rather defined mathematically, as “a real-valued function of two real variables.”¹⁵ Does the “image” therefore make sense (in its double meaning) only for human phenomenology, or is there something like an “alien” image phenomenon from the technical point of view?¹⁶ “The term ‘picture’ suggests a flat object whose appearance varies from point to point.”¹⁷ This variation has been a perceptual function of human vision so far, but now returns from within technology, where a spatial distribution becomes radically temporalized.¹⁸ Already with electronic television, it has been the human eye only which finally integrates the “flying spot” emanating from the cathode rays tube into an “image”—while “[a] machine can capture the same image, without any consciousness or experience of the visual form.”¹⁹ Is there something like the technologically “implicit image”?

While human-made, body-linked images, as cultural techniques, cannot be “liberated” from cultural semantics and (art) historical iconology,²⁰ genuinely technically coded image actions “do not represent an object” any more (Questionnaire), “but rather are part of an operation” (Questionnaire). Such imaging is no longer primarily cultural iconology, but a truly technical iconology coming to its own, a “log-icon,”²¹ in Charles S. Peirce’s sense of diagrammatic iconicity.

“ZOOMIFICATION” OF THE SOCIAL IMAG(IN)ERY, AND “SOCIAL DISTANCING”

Technológos, while oscillating between the electrophysical real (matter) and the computational symbolical (programming), does not know any “imaginary” in the psychoanalytic sense. Images in computational (aka “new”) media are increasingly mediating “social” relations, replacing conventional face-to-face communication in real presence by telecommunication *via* interfaces. But there is nothing “social” in so-called “social

media” any more, just communication in terms of engineering.²² “Much social interaction has been referred to the interfaces of different real-time communication technologies, to the point that the social field is now largely constituted by the production and distribution of images” (Questionnaire). At first glance, it looks as if the pandemic crisis has accelerated the impact of global image circulation by accelerating digital video conferencing formats like Zoom. But the “zoom” has become an opto-technical metaphor itself which lags behind the decisive transformation of indexical visual media against total datafic(a)tion. While only a material camera lens allows for a truly optical zoom, the digital zoom “adjusts the image in the camera itself [...], which is simply some in-camera image processing” which enlarges the image area at the center of the frame and trims away the outside edges.²³ The camera itself has no sense of the “image” but only knows techno-mathematical image functions. The digital “image” technologizes the visual image. Shouldn’t the “visual” here be put in quotation marks, or rather the “image” itself?

In media-archaeological analysis, the former “social field” becomes a data matrix. A UK company Vivacity Labs company has installed a thousand of surveillance cameras across the country for the permanent registering of pedestrians, bikes, and cars. Once transcribed into data, such optical signals can be interpreted by an Artificial Intelligence algorithm, in order to predict and anticipate, for example, a traffic jam.²⁴ All of a sudden, the Corona pandemic altered the function of this panoptical dispositif of dataveillance in favour of automatically controlling “social distancing,” by modifying the algorithm to measure the prescribed distance between passers-by. Thereby *vivacity* itself (literally) becomes a technical function—in direct analogy to the Corona-warning (or -tracing) apps in smartphones on the basis of Bluetooth distance metrics that does not capture images of humans any more, but simply the data of their mobile communication devices. Ironically, it is now the face masks (meant to hinder viral contagion) that hinder automated face recognition which has been the concern of privacy protection so far. It is only anonymous data which are thereby generated. “Discourse” becomes data traffic.

HUMAN IMAGE AESTHETICS VS.

ICONO-LOGICAL IMAGE PROCESSING

A truly techno-logical ontology of the image takes place in computer graphics. The most radical media-archaeological

analysis is enacted by the machine itself, as an approach “that challenge[s] an anthropomorphic register” (Questionnaire). Most images in social media are still “indexically derived” (Questionnaire) and thereby referenced to the human lifeworld. Such digital imagery is nothing but a mere “extension of man” in McLuhan’s sense. The digital image comes to its own, and starts to develop its own ontology, only when it is “born” algorithmically.

“[T]he advent of operative images and machine vision” (Questionnaire) changes the “ontology” of the image (ibid.). In object-oriented ontology²⁵ the image is granted a nonhuman existence. But the question how “we—as artists, theorists, critics, analysts, etc.—conceive of these changes in the ontology of the image” (Questionnaire) still limits the debate to the human cultural, or intellectual, sphere. The anthropocentric “we” affirms the focus on human aesthetics. The “image” stays bound to human culture as long as the analysis of such developments is restricted to *human* perception. But Walter Benjamin’s diagnosis of “profound changes in apperception” by photography, and cinematography, already assumes the point of view of the camera lens itself.²⁶

How, then, are works of art in the age of nonhuman imagery to be analyzed? “Can they still be grasped within the established fields of visual culture” (Questionnaire), or by art-historical iconology (Erwin Panofsky)? The analysis of the “technical image”²⁷ rather requires a media-scientific approach.²⁸

TRANSCODING THE IMAGE ARCHIVE

The contemporary image-space is no longer defined by cultural semantics, visual discourse, and body-related cultural techniques like painting, but by “the very conditions of the work of art” (Questionnaire) and their *archive* (in Foucault’s definition²⁹) change as they become grounded in nondiscursive technologies. “[...] the word ‘la arché’ in French [...] signifies the way in which discursive events have been registered and can be extracted from the archive.”³⁰ From a computational point of view, this is not an archival metaphor, but what the microprocessor does in visual processing is, in fact, assigning the image its storage locations and providing them with addresses. A radical media archaeology of technical images studies such *non*-discursive conditions of an emergent visual formation.

The image archive, as a visual memory institution, has had a rather passive agency so far, depending on humans to enact the iconological meanings of the visual records. But with their current digitalization and—more importantly—algorithmization, which

alters the *conditioning* principles of imaging, most conventional image collections become operative themselves, as assuming an active agency.

Even if the temptation is still there “[...] to replicate already known models like a database with standard field descriptors and an interface for public consultation mimicking the photo album,”³¹ the alternative media-archaeological approach takes the digital scan at its face value. The digitization of an image is not simply a practical conversion from one format to another, but “changes the ontology of the archive itself. [...] The DNA of a digital image is a matrix of pixels that can be manipulated mathematically and allows for a very different set of operations” (ibid.) when compared to the traditional iconological art-historical approach.

With the pervasiveness of operational images and machine vision, “more and more images seem to gain meaning and significance through their relationships with other images and from being networked [...]” (Questionnaire). Once an image has been digitized and therefore becomes addressable pixel by pixel, each of its elements can be linked, compared, and mapped upon elements in other images, resulting in a kind of alphabetization of image collections. Such hyperimages allow to navigate the image archive in unforeseen ways. Film works such as *Eye / Machine* (parts I-III, Germany 2001-2003) by Harun Farocki, who coined the term “operational image,”³² now themselves become subject to algorithmic experimentation in the archive.

DISAPPEARANCE OF THE “IMAGE OF MAN”

Let us finally return to the initial concern of the “Questionnaire.” Not only the exclusiveness of *human* “image” perception is displaced by the operative image, but the image of man as the author of images itself vanishes. In the notorious final remark of his *Order of Things*, Foucault predicts that the image of the human will disappear like the shape of a human face drawn into the sand at the sea shore.³³ In times of highly integrated microcomputer chips, this sand is indeed silicon, which dissolves the image of man by “calculation”—literally “counting with *calculi*,” that is: with pebbles. The corporal image of man reappears on computer screens, but temporarily disappears in the actual medium channel. Foucault’s apocalyptic metaphor becomes micro-temporalized by actual computing, which is recording, transduction, processing, transmission and storage of man as “data face.” Such a machine imaging escapes human “vision” all together. All that remains, for humans, is to learn circuit diagrams, and to read code.

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- 1 Such as Hermann von Helmholtz, *Handbuch der physiologischen Optik* (Leipzig: Voss, 1867).
- 2 Sigmund Freud, *Die Traumdeutung* (Leipzig: Deuticke, 1900).
- 3 As discussed by Jean-Louis Baudry, "Le dispositif. Approches metapsychologiques de l'impression de realite," *Communications* 23 (1975): 56-72.
- 4 See Warren McCulloch, Walter Pitts, "How We Know Universals. The perception of auditory and visual forms," *Bulletin of Mathematical Biophysics* 9 (1947): 127-147.
- 5 Frank Rosenblatt, "The perceptron: a probabilistic model for information storage and organization in the brain," *Psychological Reviews* 65 (1958): 386-408.
- 6 See Birgit Schneider, *Textiles Prozessieren. Eine Mediengeschichte der Lochkartenweberei* (Berlin: Diaphanes, 2007).
- 7 See <https://v2.nl/events/deaf03>.
- 8 Academy of Media Arts Cologne, 1999, https://en.khm.de/studentische_arbeiten/id.9986.workout.
- 9 Online in operation: www.suchbilder.de.
- 10 Ernst Jünger, "Photography and the second consciousness," excerpt from E. Jünger "On Pain," in *Photography in the Modern Era. European Documents and Critical Writings, 1913 / 1940*, ed. C. Phillips (New York: Aperture, 1989), 207-210.
- 11 "Daß Maschinen kein Empfinden haben, bedeutet in diesem Fall eine große Hilfe." Sandra Kegel, "Auf der Suche nach den verlorenen Kindern," in *Frankfurter Allgemeine Zeitung*, February 20, 2001, 56.
- 12 See Vivian Sobchack, "Afterword. Media Archaeology and Re-presencing the Past," in *Media Archaeology. Approaches, Applications, and Implications*, eds. Erkki Huhtamo, Jussi Parikka (Berkeley: University of California Press, 2011), 323-333.
- 13 Joel Aviram, Jason Snyder, *James Cameron's Titanic*, foreword by James Cameron (New York: Harper Perennial, 1997), xii.
- 14 See Bernard Loriferne, *Analog-Digital and Digital-Analog Conversion* [FO La Conversion Analogique-Numérique, Numérique-Analogique, Paris 1976] (London: Heyden, 1982).
- 15 Azriel Rosenfeld, *Picture Processing by Computer* (New York: Academic Press, 1969), 1.
- 16 See Ian Bogost, *Alien Phenomenology, or What It's Like to Be a Thing* (Minneapolis: University of Minnesota Press, 2012).
- 17 Rosenfeld, *Picture Processing by Computer*, 1.
- 18 See Timothy Scott Barker, *Time and the Digital: Connecting Technology, Aesthetics, and a Process Philosophy of Tim* (Hannover, New Hampshire: Dartmouth College Press, 2012).
- 19 Harun Farocki, "Reality Would Have to Begin," in *Documents ½*, trans. Marek Wieczorek, Thomas Keenan, Thomas Y. Levin (Fall/Winter 1992): 136-146.
- 20 For such "culture-free images" see Claus Pias, ed., *Kulturfreie Bilder. Erfindungen der Voraussetzungslosigkeit* (Berlin: Kulturverlag Kadmos, forthcoming).
- 21 A neologism coined in Francesco Striano's PhD thesis *Through the Screen. Towards a Philosophical Mediology* (University of Turin, summer 2020).
- 22 As identified in the adaption of communication engineering to sociological analysis: Niklas Luhmann, "Die Unwahrscheinlichkeit der Kommunikation," in *Soziologische Systeme, vol. 3: Soziales System, Gesellschaft, Organisation* (Opladen: Westdt. Verlag, 1981), 25-34.
- 23 Website "Dummies", accessed December 24, 2020, <https://www.dummies.com/photography/digital-photography/the-difference-between-optical-zoom-and-digital-zoom-on-your-digital-camera>.
- 24 Website "Forschung und Wissen", entry "Covid-19-KI-Kameras beobachten Social Distancing", accessed December 19, 2020, <https://www.forschung-und-wissen.de/nachrichten/technik/covid-19-ki-kameras-beobachten-social-distancing-13374211>.
- 25 See Levi R. Bryant, *Onto-Cartography. An Ontology of Machines and Media* (Edinburgh: Edinburgh University Press, 2014).
- 26 Walter Benjamin, "The Work of Art in the Age of Mechanical Reproduction" [1936], in *Illuminations*, ed. Hannah Arendt, trans. Harry Zohn (New York: Schocken, 1969), 217-251.
- 27 Vilém Flusser, *Into the Universe of Technical Images* (Minneapolis: University of Minnesota Press, 2011).
- 28 For such an analysis, see Wolfgang Ernst, Stefan Heidenreich, "Digitale Bildarchivierung: der Wölfflin-Kalkül," in *Konfigurationen. Zwischen Kunst und Medien*, eds. Sigrid Schade, Christoph Tholen (Munich: Fink, 1999), 306-320.
- 29 In his *Archaeology of Knowledge* (French original 1969), "Foucault describes the archive in terms of the conditions of the possibility of its construction": Website "Sparknotes," accessed December 27, 2020, <https://www.sparknotes.com/philosophy/arch/terms>.
- 30 "Dialogue on Power. Michel Foucault and a group of students," in *Quid*, ed. Simeon Wade (Los Angeles: Circabook, 1976), 10.
- 31 Accessed December 11, 2014, http://sissv.activearchives.org/w/Welcome_to_the_Digital_Darkroom.
- 32 See Trevor Paglen, "Operational Images," *e-flux* no. 59 (November 2014), accessed December 26, 2020, <https://www.e-flux.com/journal/59/61130/operational-images>.
- 33 "[...] like a face drawn in sand at the edge of the sea": Michel Foucault, *The Order of Things. An Archaeology of the Human Sciences* (London: Routledge, 2009), 422.