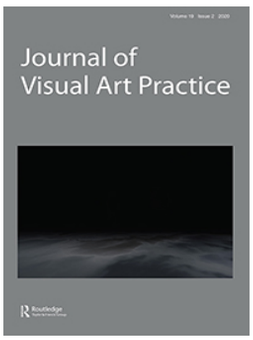

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Latent digital

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ABSTRACT

What insightful connections can be drawn between the history of photography and today's media habitat? Should they rely exclusively on discourse-modalities like 'analogue' and 'digital'? And must these modalities, with their corresponding technologies, always be mutually exclusive? The zero-sum distinctions through which photography has traditionally been narrativized prevent us from properly theorizing other forms of media and art that have emerged since the advent of photography or from it. Instead, a properly defined 'post-post-photographic' enquiry should seek other networks for its operational cultures and contexts of production. This paper develops alternative definitions of photography as a prototypical form of media art. Such definitions no longer ascribe higher value to the creation of individual images but instead critically explore and transform the broader theoretical and technological contexts in which images are currently being created, whether these are electronic, digital, interactive or networked.

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Introduction

It is all-too-rarely acknowledged that since all aspects of its technical modes of production have been transformed, photography's historical and theoretical genealogies must change too. To date, the precedence for various quasi-photographic image manifestations is still sought and found in an institutionally sanctioned and medium-specific artistic history of photography. Consequently, the means and ends of emergent image forms are still theorized as descendants of a narrow tradition deriving exclusively from perspectival formulas, optical designs, chemical and physical processes. Instead, a properly defined 'post-photographic' enquiry could seek other networks for its technical contexts of production and operational cultures. In doing so, it must resist the temptation to perpetuate artificially-dichotomized theoretical constructions which, for 180 years, have beleaguered the theory of photography. From the nineteenth century onwards, these include the zero-sum oppositions of body (a substantive object or state-of-events) and mind (a mythic authorial position).[1] There are also later distinctions between causality and intentionality or between transparency and opaqueness (Scruton 1981; Walton 1984). The most recent of these pairings is the over-played, bizarre and sometimes funny opposition between

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'Analogue' and 'Digital' modalities. This article will place the stress on demonstrating that these modalities are in fact *mutually inclusive*.

If successful, such a strategic inversion from fixed dichotomies to dynamic reciprocities will undoubtedly clear the way for a more pluralist, and I dare say less vulnerable, theory of photography in and as art. By critically exploring the broader technological contexts in which imagery is being created, such a theory will no longer be required to ascribe higher value to individual images or, for that matter, to individual image-makers. Such an 'ecological' approach can also facilitate a better understanding of photography as a medium which has always contained electronic, digital and interactive potentialities. Most importantly, such a change will suggest a definition of photography as having always been a prototypical form (if not forefather) of algorithmic art.

Analogue and digital imagery I

To date, most theoretical accounts within what has come to be known as Post-Photography (Mitchell 1992, 22–57) and more recently Post-Post-Photography (Tietjen 2018, 376–378) reprise the distinction that 'analogue' photographic images are created with a camera whereas 'digital' photographic images are created with a computer (Jäger 1996, 107–109). While other distinctions are perhaps harder to uproot, this one is easy. If digital photography wasn't based on existing technologies that are considered imperative for the traditionally photographic, perspectival geometry for example, why do lenses still grace the fronts of some camera bodies? And why had camera bodies changed so little before the appearance of mobile phone photography? Today's cameras are embedded in a plethora of portable computation apparatuses – hand-held, clipped onto one's body or implanted in it. However, in all those devices, the digital sensor is always placed vertically inside the device, exactly where the film used to be placed. Of course, this is but one point to clarify that the overwhelming majority of digital photographs resemble traditional photographs for a reason. Put differently, there is little benefit in insisting on a neat separation between analogue and digital as this can, at best, support the suspicion that traditional photography theory has still not passed on, or that it has but its passing did not yet hail the arrival of another theory. Instead we ought to be exploring the prospect that digital processes in photography are embedded into the fabric of its purportedly analogue appearances.

Strangely enough, one of the first writers to propose that photography is 'a decisive mutation of informational economies' was Roland Barthes (Barthes 1977, 45). Even so, drawing insightful connections between photography, as Barthes knew and defined it, and today's image-information economy, has so far been an unsuccessful endeavor. At present, most attempts to theorize photography's compatibility with concepts of communication and computation comprised mainly of attempts to leverage one single dualistic taxonomy. See for example Geoffrey Batchen's statement: ' … photography is a binary (and therefore numerical) system of representation involving the transmutation of luminous information into on/off tonal patterns made visible by light-sensitive chemistry' (Batchen 2006, 28). This description is germane and Batchen is indeed justified in attempting to debunk Lev Manovich's privileging of cinema over other forms of 'old media' (Manovich 2001, 50–51). Further, Batchen's insistence on naming photography as the precursor of 'new media' is vital but there is more to this point that Batchen doesn't exhaust the issue.

Where and *how* does photography constitute a binary system representation? And *what*, if anything, does this afford? To be fully accurate, not all binary systems are numerical and not all numerical systems are binary (they can be hexadecimal for example). Thus, to facilitate a more insightful construal of photography's primacy within new media I find the terms numerical and digital insufficiently precise. Instead I prefer to first utilize the term 'digitality' (derived from Nicholas Negroponte's 'being digital') as an epistemological condition and not an ontological one (Negroponte 1995, 163–226). I use this term to analyze the basic chemical structure of the *traditional* photographic emulsion.

Importantly, a silver halide, the sensitive component in photographic emulsion, does not and *cannot* turn grey. It can only turn black or remain unchanged. Thus, if the strict sense of the term binary means non-continuous or discreteness of only two states, then the silver halide *is* a binary instrument to every intent and purpose.[2] It can thus participate in Boolean logic applications onto which almost all contemporary forms of digital representation are grafted. Digitality, however, is much more than just this. Yes, it does necessitate disunion of the unitary and separation of the indivisible whole into its constituent parts, but it also requires the powers of two. Because, naturally, two symbols alone cannot signify much the condition for digitality is that there be *multiplicity*. If minuteness equals multiplicity, as often it does, the more minute the binary instruments are the more potent a digital system becomes. With increasing potency (that is miniaturization of instruments) the more likely the condition of digitality is to emerge and hold in the system. And hold early in the history of photography it undoubtedly did – in the color grey. Wherever grey exists on a photographic emulsion it is there because silver halide molecules *are* minute. In other words it is *only* the density of black versus 'white'[3] molecules within a given area that creates various tones of grey within the emulsion. And greys, as anyone who has ever entered a darkroom surely knows, are no small matter. The more shades of grey a silver gelatin print has, the more 'photographic' it is considered.

Locating the origins of digitality in photography in the distinction between black and white as most commentators indeed would have it is, I argue, uncreative and limiting. Rather, digitality should be located in the greys and in the quest for their infinitude. This, we must recall, is what the early 'proto-programmers' of photography also sought.[4] Of course, today programmers of photography are interested in much more then greys. They are seeking infinitude for the world and everything in it, infinitude by means of granularity.[5]

Furthermore, I contend that it is simply too easy to use existing definitions of analogue and digital to forge uninformative terms such as 'analogue photography' and 'digital photography' and that it is altogether mistaken to describe the two as photography and 'post-photography', respectively. If anything, the chronological hierarchy here should be reversed. 'Analogue photography' can be dubbed 'pre-photography' and only 'digital photography' should be called photography. Perhaps, if the workings of contemporary photographic apparatuses were not so black-boxed from the end users' scrutiny, perhaps if they were in any way visible from the images rendered, then it would become clear that it is only with computerized platforms that the qualities traditionally attributed to photography can be identified. My contention here is that photography has always been a quasi-digital (if not overtly digital) multimedia platform.

With this in mind, we should still remember that photography has all too often been defined by overplayed distinctions. In addition to the problematics these perpetuate,

each of these opposites highlights an unproductive demarcation between the process; photographic imaging, and the product; the photographic image, while critical theory always gave precedence to products; the photographic images. Such demarcations are today unnecessary, in fact impossible, when images are, more often than not, open-ended and unresolved latencies of and for other images or other media.

Analogue and digital imagery II

Perhaps the reciprocity between digital and analogue can now be understood in the following way: for photography to be analogue it can pursue only one quest – that of fashioning, or simply naming, common attributes for both photographic image and photographed object. This quest was, from its outset, of limited philosophical prospects and its failure should now be acknowledged. An ontological model maintaining that any technology is capable of homogeneity and continuity, that it is in that monolithic, when its manifestations are manifold and its forms, without exception, are riven at their core, is nothing but futile. But, if, proceeding from Vilém Flusser's post Werner Heisenberg philosophy, we concede that we are living in a universe that is stuttering (both physically and metaphysically), then the digital instinct in photography can be seen as what preserves that stuttering and turns it into magic.[6] It accentuates and proliferates it to produce an endless stream of preprogrammed speech. This holds true even for photographers who are content with orienting themselves towards objects or states-of-events in the world and the theories that celebrate and rejoice in the illusion that this may be possible. Because the camera apparatus is already separate, or set apart, and opposite from that object, because the camera is only a 'viewer proxy' as Alexander Galloway has called it (Galloway and Correa 2015), then it should become clear that photography has always been 'of digitality'. This viewer is inside the world, of course, but the structure here is not of simple immanence. Rather, it is a structure of distance, difference and relationality that predominates.

Digital multimedia databases have arisen and became popular 'because they prioritize complex (or post-structural) thought over complicated (or structural) thought and over intricate (or serial) thought', argues Ross Gibson (Gibson 2013, 255). This suggests that a technology that enabled complex post-structural thought well before the term 'digital media' was known to us, cannot be seen as anything but digital or programmatic. Moreover, if photography has always been a latently digital system, then it has always borne signs of programmability, which is the value-yielding system characteristic, exponentially more so than bare digitality. Arguably, it is photography, before anything else, that has proven the accuracy of the oft-repeated computer-programmers' mantra that 'God only invented 0's and 1's, everything else is man-made'.[7]

Analogue and digital imagery III

Revolutions in imaging technologies and practices can never fully erase the environments within which these technologies were introduced. Therefore, a link between photographic images and previous types of images was once necessary, and indeed maintained in various forms of materiality. The quintessence of those forms was of course the photographic print which enabled the permanence and persistence in time of photographic

images. An alternative title for the photographic print could be 'photograph tethered to its photograph-carrier', paraphrasing Lambert Wiesing's definition of 'image carrier' (Wiesing 2011, 240). Importantly, the photograph-carrier is most often paper. Thus, without the once-mandatory act of moulding, forging or creating a photographic print, a photographic image could not become an artefact.

Perhaps we could say this: not only is 'analogue photography' *always* digital, but, to become an artefact a photographic image must exercise its digitality in a process of printing, or, in other words, 'tethering a photograph to a photograph-carrier'. This process, in turn, renders the photographic image susceptible to external conditions which are, more often than not, analogue. Photographic printing is always, in other words, something between self-deception and voluntary self-annihilation.

Notwithstanding, now that this process is no longer required by anyone outside of museum gates, we can appreciate that the photographic print, or rather the technology from which it emerged and the habitats it occupied, embody qualities which we commonly associate with other, more technologically advanced, forms of media. One of the most graceful lineages of photography demonstrating just that starts with Walker Evans, or rather, with Sherrie Levine's gesture of photographing from a Walker Evans catalogue, a number of Evans' well-known photographs from the Great Depression.[8] Levine then signed the resulting prints and exhibited them as her own work of art. This gesture, I argue, is interesting for two aspects. The first is the fact that only some visual information remained present in Levine's photographs (such as, in the best-known photograph from the series: the recognizable facial features of Allie Mae Burroughs). This aspect enabled the post-modernist discourse on appropriation. The second and more interesting aspect is our inherent knowledge that, because of the analogue nature of the process, other parts or types of information *must* have been lost, whereas others may have been added. This suggests that reproduction photography is a slow form of glitch art (Figures 1 and 2).

Descending from this piece and further problematizing our notions of genesis and inception is Michael Mandiberg's *After Sheri Levine*. This work is designed to allow free full-quality downloads of scans made from Levine's reproductions of the Evans photographs (Mandiberg 2001). Thus, this work is not only performed in, with or through digital procedures, it is also *about* those procedures and how they pertain to photography. Furthermore, if, oblivious to the logic of the artwork, one were to desire a reverberation to Analogue logic, one could print a downloaded Mandiberg file. The resulting artefact, of course, would only be similar, but *never identical*, to any other print made by another prone-to-nostalgia photo-viewer (Figure 3).

Electronic, digital, networked and interactive imagery

When successive revolutions in imaging technologies occur, they can build upon foundations provided by other technological media. Imaging technologies can then become unified in multidimensional and multimedia structures. Put differently, forms of seemingly-photographic images no longer emerge from material processes nor do they create permanent material artefacts. Such is the case with electronic television images. These are the result of a collision between electrons emitted by a cathode and a luminophore-coated surface of a cathode-ray tube (CRT). Electronic images are, argues Ryszard

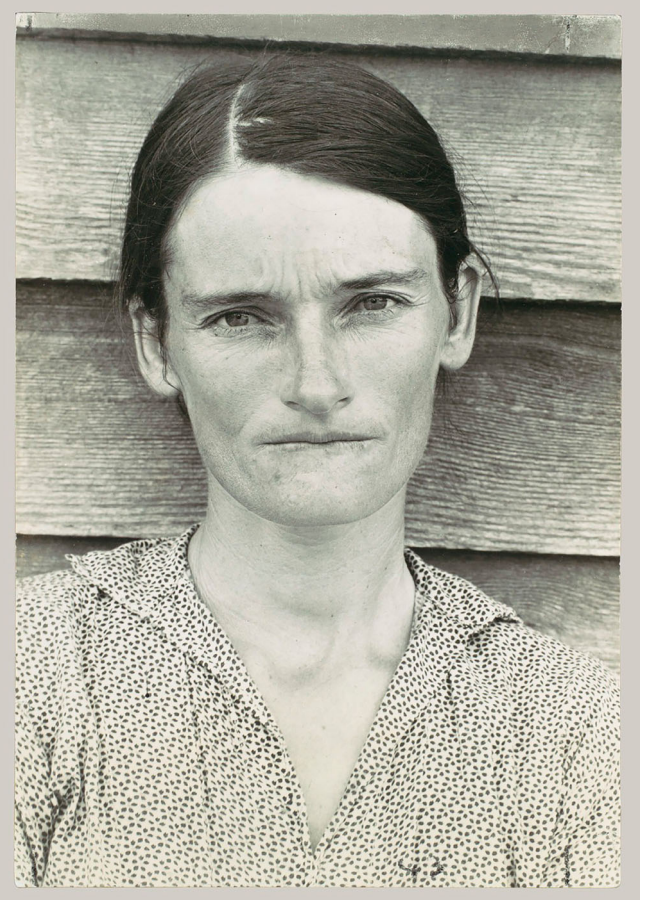

Figure 1. Walker Evans, *Alabama Tenant Farmer Wife*, 1936.

W. Kluszczynski, vanishing 'light performances' or simply 'events' (Kluszczynski 2016, 5). Curiously, very similar ideas were expressed by none other than Laszlo Moholy-Nagy. For him the age-old technique of the photogram was: 'a hitherto unknown field of manipulation with a completely novel aspect of optical composition' (Moholy-Nagy 1928, 3) and the photo-sculpture (a type of photo-montage) was: 'an organized apparition' (Moholy-Nagy 1928, 8). Clearly, I am not suggesting that Moholy's manoeuvres in the dark were electronic in any familiar sense of the term. There is however merit in thinking of his workflow as such, if only as means to better understand our present workflows.

Moreover, some of the features found in electronic images and the problems related to them appear again when we analyze images born from digital files – most notably their latency – the fact that without the occurrence of a prescribed event they exist solely as a data file, or worse, as voltage differences and nothing more. This latency necessitates what Ryszard W. Kluszczynski calls a 'rendition' – the process by which a digital file becomes an image. Notably, this process is always a reversion to analogue media because *all* images are analogue, otherwise we could never see them.

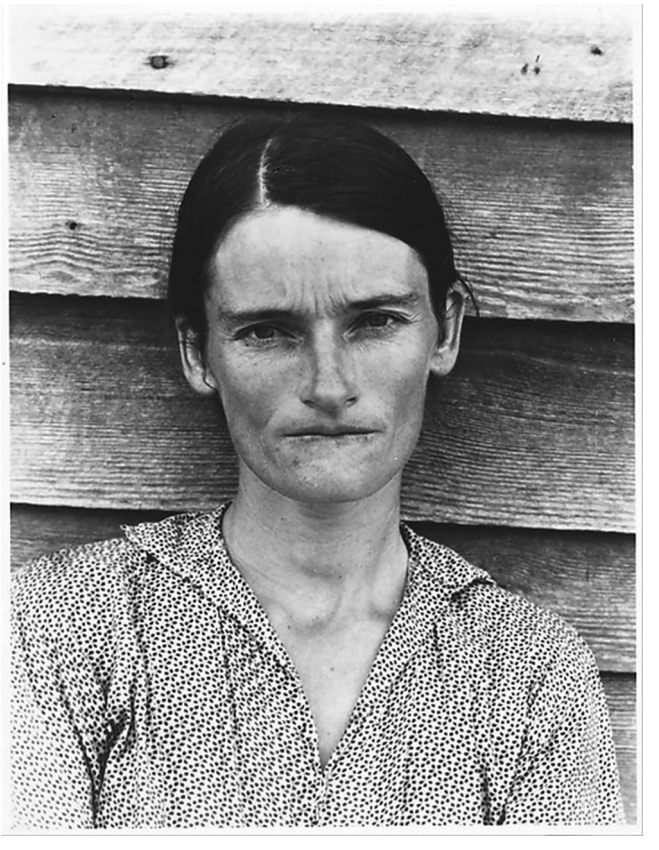

Figure 2. Sherrie Levine, *After Walker Evans: 4*, 1981.

The difference between an electronic-born image and a digital-born one is based on the singularity of the electronic event compared to the potential for multiple (even infinite) identical digital renderings. Here again, it is important to emphasize that the potential for multiple identical renderings was always one of photography's most celebrated traits.[9] Importantly, the difference between understandings of the photographic process as somewhat-electronic or quasi-digital concerns *variability* – the potential for multiple repetitions of the same electronic event and the possibility of numerous *differing* renderings in the digital platform. The dissimilarity between the two comes from the possibility of *modifying* a digital file in various ways, all of which still retain its later identity as an image, albeit distinct from other images. On the other hand, the ability to reproduce a magnetic recording, for example, always leads to the same visual event with consequent changes always regarded as a defect.

This ability to succumb to manipulation from addressee-users clarifies that images can be transformed into tools for action, interfaces with the potential for a wide range of forms of communication and interaction with both hardware and software. In other words, the perceived objectivity of digitality is transformed into the instrumentality of interactivity. For this very same media-related reason, photographic images are always modular networks of their potential variations. Put differently, even if photographic images aren't always interactive in and of themselves, their 'hardware' always bears the potential for interaction.

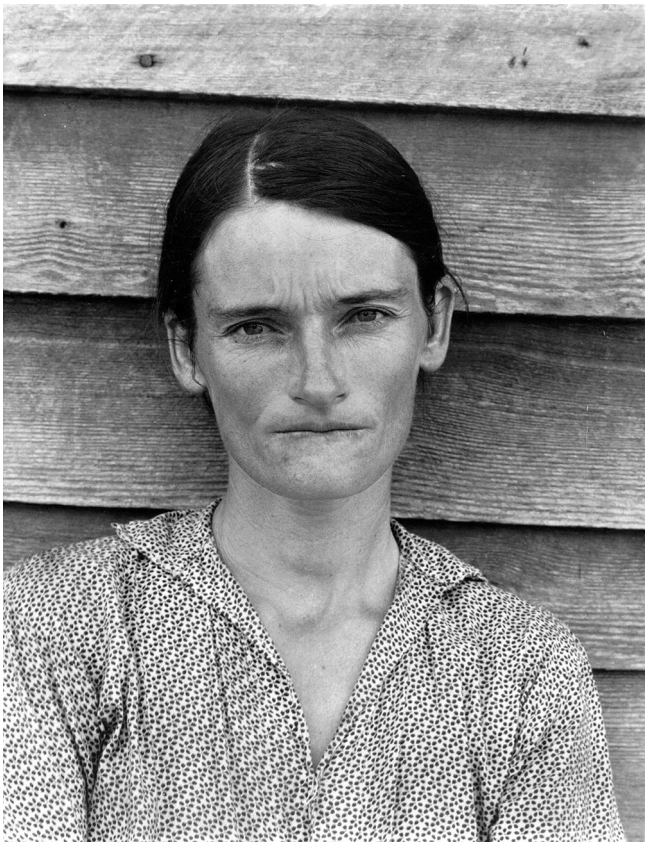

Figure 3. Michael Mandiberg, Untitled (AfterSherrieLevine.com/2.jpg), Website, Digital Image 3250px × 4250px (at 850dpi), and certificate of authenticity CC BY-SA 2001. Courtesy of the artist.

Algorithmic imagery

If the potential of digitality is quality of the photographic technology, workflow and tradition, is photography *itself*, as a technology, rendered algorithmic or open to algorithmic renditions? After all, algorithms have a long history in mathematics, the better parts of which predate computing. An algorithm, to be clear, is only a set of instructions for a sequence of procedures that will achieve a specified result. Many of photography's historical patronages have developed exactly such sequences. Think for example about the motion studies by Eadweard Muybridge or those of Étienne-Jules Marey. And consider Peter Henry Emerson's insistence on 'differential focusing' outlined in his Naturalistic photography publications (Emerson 1973). Are these not sets of instructions for a sequence of procedures in order to achieve a specified result? The best example of this type of procedure is of course Ansel Adams' famous 'Zone System'. This course of action, by now mostly ghettoized, underappreciated and soon forgotten, demanded that, at the film exposure stage, accurate measurements and calculations be made to anticipate which future discrete actions would be required in the darkroom (Adams and Baker 1983a, 1983b, 1983c). Adams' process was such that it required a sequence of precise actions and in return guaranteed that the particularities of a pre-visualized photographic

image would be realized. Adams' legacy is often used to personify (or discredit) ideals of creative mastership in photography. Nonetheless, it is never taken into consideration that this legacy is the overt insertion of an algorithmic process into the photographic workflow – demonstrably the only possible process in times of post-industrial image production.

Three observations may be adduced here. Firstly, technical expertise had to be developed to 'discover' photography. Secondly, photographers must learn how to methodically apply this expertise and its subsequent developments. Thirdly, and perhaps most importantly, regardless of how intricate these subsequent technical developments have become, common to all of them is the intent to further automate either the production of the image, the dissemination of its perceivable, material aspects, or both. In photography, I assert, there is no such thing as non-algorithmic image synthesis.

According to Frieder Nake, a mathematician, semiotician and pioneer of computer art, the work of art in algorithmic art is the description of an infinity of possible works (Nake 2010, 56). This is true for photography too: it forces its practitioners to create entire *classes* of art works, not just individual ones. Therefore, the tendency to think of photography as being 'a realm of realities' is misguided. Photography is in fact a realm of possibilities and potentialities wherein images are nothing more than a looming latency awaiting realization. Examining contemporary technologies and artworks demonstrates that this modus operandi, which was always tradable and exportable, is nowadays found everywhere. It has metamorphosed into the epistemological structure of a variety of artistic approaches: interactive, networked, algorithmic and even living (or bio-like) with their tendency to behave autonomously; to *independently* perform pre-prepared scripts as they execute visual performances.

Arguably, all of the above mentioned artistic approaches have been conceptual if not technical latencies of photography since its 'analogue' days. Common to these approaches is the ability to embed, as in photography, an operation code into every image-execution. In other words, their 'imaging processes' incorporate the possibility, in fact necessity, of an infinitude of other images appearing. Therefore, the separation between imaging process and image artefact is and always has been redundant in photography.

Conclusion (programmatic imagery)

Computation, it is clear, has brought new functionalities to the convergence of vision and representation, just as geometrical perspective once did. If, on a superficial level, the facade of the image seems to materialize as it always did, on a deeper, still black-boxed, level images partake in new operations. For the time being these two operations mostly function in synergy. Importantly, it is the powerful undercurrents, not the face of the image, that create the image-worlds we habitually enjoy or otherwise agree to participate in. From the navigable panoramas in Google Street View to the automated border controls and drone-distance warfare, it is computation that now determines *what* alignment of vision and representation we are living in.

Merging this view of our image-saturated habitats with Harun Farocki's concept of the operative image yields a new definition of the image (Farocki 2003, 2004). Within this definition it is not unusual for an image to be or to become equipped with means that gather, compute, merge, and display heterogeneous visual data in real-time. This condition, to be clear, necessitates an expanded definition for the contemporary image: it is

itself a programmatic interstice of data gathering processes with operations of processing, rendering into information and its subsequent proliferation and exchange.

Photography was often understood as the operative convergence of vision and representation, made possible by optics, mechanics and chemistry. The mathematization of photography and its subsequent dissolution have rendered the image itself operative, and this operativity supposes an understanding of the world not as a stable state-of-affairs preceding the image (say, a mountain) but rather as an ongoing, never-ending, open-ended stream of possibilities (a fountain). An image is thus:

> no longer a stable representation of the world, but a programmable view of a database that is updated in real-time. It no longer functions as a (political and iconic) representation but plays a vital role in synchronic data-to-data relationships. The image is not only part of a programme, but also contains its own 'operation code': it is a programme in itself. (Hoelzl and Marie 2015, 4)

'Every program', argued Vilém Flusser, 'functions as a function of a metaprogram and the programmers of a program are functionaries of this metaprogram' (Flusser 2000, 29). The hierarchy of programs is, so to speak, open at its top. There are no independent programs because the operations of a program can always be reduced, or relegated, to another program. This, for media as well as for art, has far reaching implications. If, there are no independent programs then there are no independent images and no independent mediums. Conceivably, image specificity, just like medium-specificity within a programmatic realm, is impossible to sustain. Thus, there is little reason now to be interested in disciplines or in categorizing them. We should only be interested in the strategies for their realization. Since all media are now concessions to inferior human processing capabilities, intermediaries connecting us to the language of the computer, the pertinent question today is how to distinguish between computations and their non-computed surroundings. For this writer, the history of photography seems to suggest that just like there is no way to differentiate between process and product in photography, so too there is little benefit in insisting on the idea that media 'begins' somewhere (or that it has an end). Computers and their output are now one and the same, just like photography and photographs always were.

Notes

1. Curiously we might now read Bazin's oeuvre as an attempt to reboot this distinction (Bazin 1960).
2. Henri Van Lier alludes to a similar point in: Van Lier (2007, 16).
3. Strictly speaking there are no white silver halides because halides don't turn white. They just remain unchanged.
4. The Daguerrotype process, contended Daguerre, 'consists in the spontaneous reproduction of the images of nature received in the camera obscura, not with their own colours, but with very fine gradation of tones'. Reprinted in: Trachtenberg (1980, 11).
5. Of primary importance is that information circulates as the presence/absence or absence/presence. And with sufficient storage capacity, that circulation is immortality in technical positivity (Kittler 2012, 144).
6. Thus it was only recently that Planck was able to show that everything stutters (is 'quantic') … this implies that the clear and distinct (stuttering) numbers are adequate to the world, and that the fluent letters cannot grasp the world. That the world is indescribable but that it can be counted. This is why the numbers should leave the alphanumerical code, become

independent of it. Which in fact they are doing: they are establishing new codes (like the digital one), and they feed computers (Flusser 1989, 1).

7. This sentence paraphrases words attributed to the mathematician Leopold Kronecker: 'God made the integers; all else is the work of man'. This relatively obscure statement gained its popularity when Stephen Hawking used a part of it as the title for a book (Hawking 2007).
8. Starting in 1935 Evans did photographic work for the Resettlement Administration (RA) and later for the Farm Security Administration (FSA), primarily in the southern United States. In the summer of 1936, while on leave from the FSA, Evans and writer James Agee were sent by *Fortune Magazine* on an assignment to Hale County, Alabama for a story the magazine subsequently decided not to publish. In 1941, Evans' photographs and Agee's text detailing their stay with three white tenant families in Hale County were published as the groundbreaking book *Let Us Now Praise Famous Men*. The book's detailed account paints a deeply moving portrait of rural poverty (Agee and Evans 1969).
9. This is a point many writers insisted on, from Arago to Benjamin (Trachtenberg 1980).

Disclosure statement

No potential conflict of interest was reported by the author.

Notes on contributor

Yanai Toister is an artist and scholar. Toister's artworks have been shown in numerous solo and group exhibitions (including: Sandroni.Rey, Los Angeles; Dvir Gallery, Tel Aviv; Kunstahalle Luzern, Switzerland; Maison Europèenne de la Photographie, Paris; the 11th International Architecture Exhibition at the Venice Biennale; Kunstmuseen Krefeld, Haus Lange, Krefeld, Germany; Israel Museum; Tel Aviv Museum of Art). Toister's writing has been published in various catalogues and academic journals (including: *Philosophy of Photography*, *CITAR*, *Mafte'akh Lexical Review*, *Ubiquity* and *Photographies*). Toister's forthcoming book, *Photography from the Turing Shroud to the Turing Machine*, will be published in 2020 by Intellect/U.Chicago Press. Toister is currently director of the Unit for History and Philosophy, Shenkar College of Engineering, Design and Art, Israel.

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