

Soft Interventions: Collaborative Agencies Between Artists and Photography Editing Software

Jane Vuorinen

Recently, there has been a growing number of artists working between photography and digital art, creating artworks in which the signs of the digital operations have been left visible. In this article, I focus on three contemporary artists who use photography as a starting point in a process in which the work done in the digital environment of photography editing software is as important a creative phase as the initial taking of the photograph: Andrey Bogush, Liina Aalto-Setälä, and Aaron Hegert. Bogush and Aalto-Setälä are based in Helsinki, as I wanted to start with artists with whom I could meet and talk about the creative process. I chose Hegert's work not only because of its subject matter but also because of the way I came to encounter it, through a virtual exhibition arranged during the course of the 2020 pandemic.¹

The works of Bogush, Aalto-Setälä, and Hegert at first seem like photographs, but on a closer look, it becomes apparent that there is something more to them. All three artists use Adobe Photoshop, which has remained the most widely known and used photography editing and digital art software since its release in 1990.² The editing software is such an integral part of these artists' work that it should be considered not only a tool or medium but also as an accomplice, their practice then becoming a collaboration with the software. Starting from a reconfiguration of single authorship, I examine what kinds of subjectivities and agencies these works and practices produce, and how producing and encountering the works through screens affect our understanding of them.

From the start, the works of Bogush, Aalto-Setälä, and Hegert pose a challenge for classification. They could be considered dig-

ital art, but as they are also based on photographs, they have an additional twist to them regarding questions of materiality, representation, and their status as images. One might be tempted to use the terms post-photography, post-digital, or post-internet, but the difficulty with these classifications is that they seem to reduce photography, digitality, and internet to singular historical phenomena, after which new and more diversified developments would have occurred.³

Art historian and curator Christiane Paul notes the fluidity of the terminology for technological art forms, emphasizing the risk in making strict distinctions of constantly developing forms of art, like digital art. Paul remarks: "The term 'digital art' has itself become an umbrella for such a broad range of artistic works and practices that it does not describe one unified set of aesthetics."⁴ "Digital art" is also often used synonymously



with “new media art.”⁵ Paul makes a “basic but crucial” distinction between “art that uses digital technologies as a tool for the creation of more traditional art objects—such as a photograph, print, or sculpture—and digital-born, computable art that is created, stored, and distributed via digital technologies and employs their features as its very own medium.”⁶ The artworks of Bogush, Aalto-Setälä, and Hegert, however, fall between these two categories, as they are created in a digital environment, which is an integral part of their meaning, but they can also be exhibited as traditional art objects.

The boundary-crossing nature of Bogush’s, Aalto-Setälä’s, and Hegert’s works encourages research especially on the vocabulary their description requires. In *The Reconfigured Eye: Visual Truth in the Post-Photographic Era* (1992), William J. Mitchell uses the words “electrobricolage” and “computational readymade” to describe digital images that can be “part scanned photograph, part computer-synthesized shaded perspective, and part electronic ‘painting’—all smoothly melded into an apparently coherent whole.”⁷ Although these terms have not been widely used in later research, they are apt charac-

terizations. The term “digital composition” could also prove appropriate, as it contains a connection to poetical and musical composition, which can manifest as multiple performances of an original score. However, none of these terms contain a link to photography, which remains a crucial part of the meaning of these artworks, practices, and operations.

Photography has been seen, since its inception, as a collaboration between human and nonhuman agents, and digitality has brought with it a proliferation of different kinds of software at play in photographic practices. Although software has become acknowledged as a cultural artifact in its own right,⁸ photography editing software, however, is often disregarded as no more than post-production. In this article, I focus on the photography editing software and the digital workspace, stressing their activity and agency as an integral part of the artistic process. The three main areas of inquiry are originality, collaborative models of production, and authenticity.

Hiding and Revealing

Andrey Bogush (b. 1987, Russia) often starts by selecting a photograph from his personal

archive or finding one online. He then works with the photograph in Photoshop, adding elements, hiding or covering parts of the source image. This act of concealing the photograph is fundamental to his work. Bogush states that by not showing something one can also build an identity, so that the hiding itself becomes the thing one wants to reveal.⁹ Bogush often sets out with a horizontal or landscape-oriented photograph, but works with it in the software using a vertical worksheet, thus adding a surplus area over or under the source image. This flipping between the two layouts requires addition, filling the remaining empty space.

In *Proposal for hand, phone and duplicated curtain*, 2015 (Figure 1) a curtain features as a leitmotiv, a duplicated rendering. The computational operation of duplication is often present in Bogush’s work, and it often also appears in the names of the works, as do Photoshop elements like patterns and gradients. The gray default pattern in the upper part of the image is one that can be chosen as a filler or background; the blue line shows the sweeping movements of the hand left and right, evoking the multi-layered spatiality of the interface. The duplicated cur-



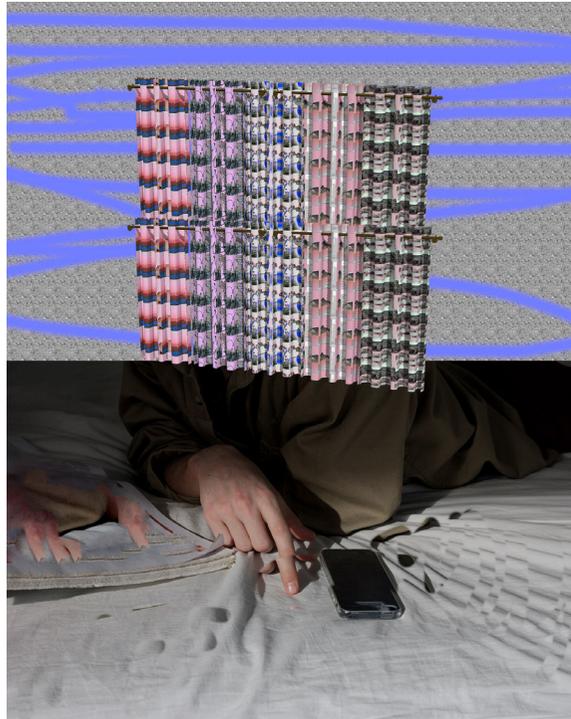


Figure 1. Andrey Bogush, *Proposal for hand, phone and duplicated curtain*, 2015.

tain points to the topos of diptych, the word curiously derived from the Greek *diptukha*, meaning a pair of ancient wax writing tablets that were hinged together and could be folded closed to carry around, an early mobile technology not unlike our current smartphones. In the lower part of the im-



Figure 2. Andrey Bogush, *Proposal for image placement (stretched, curtain)*, 2017. Digital print, installation view from *ARS17 Hello World!*, March 31, 2017 - January 14, 2018, Finnish National Gallery / Museum of Contemporary Art Kiasma. Photo: Finnish National Gallery / Pirje Mykkänen.

age, the phone lies face down, and the image of the hand with the touching finger is duplicated as well, in dabs and streaks of altered patches that visually transfer the artist's hand movements on the computer trackpad to the image. These altered strokes or dashes visually hide in the folds of the sheet, perhaps spelling out letters in the left corner and shaping a streaming line emitting from the phone on the right. On the left side of the photographic area,

there appears to be a newspaper, a subsidiary relic of mass communication.

In *Proposal for image placement (stretched, curtain)*, 2017 (Figure 2) the work becomes manifested in a curtainlike installation. Bogush's curtain works are usually quite large, as they are printed on industrial PVC, which is normally used to cover buildings or construction sites—a symbolic meaning hidden here as well. A curtain is something that covers or hides away, but can also be used



to emphasize showing, as in theater where the curtain marks the beginning and ending of the events on stage. The folding of the curtain is reminiscent of drapery as an art historical theme or subject. The nude figure—an archetype of art history—floats distorted and unidentified in the pictorial space of the work. The pink and black background colors imply a horizon extending out to infinity.

Origins and Iterations

Using the word “proposal” in naming the works, Bogush makes them linger somewhere between fact and fiction. They are put forward for others to consider, suggesting this is something that could be. It is as if the works leave room for the viewer to make the decision of realizing them on a conceptual level, of validating their existence, as a proposal is something not yet executed, something that leaves space for further action.

Naming the work is an important stage for Bogush, after which the image is done, and there is no going back to make any adjustments. Before this, everything is open, so that the naming becomes the act and the decision that makes the work finished. In the software, changes are always an option, and one can

go back to any stage of the process, from the uploading of the source photograph to all the steps after. These steps, in Bogush’s process, can total about six hundred separate ones per work.¹⁰ The software records this history of operations, and one can move back and forth between the individual steps using the History Panel, which makes a chronological list of all operations during a work session. Each time one makes a change, the new state of the image becomes added to the panel as a point from which one can start working again.

These phases recorded by the software could also be considered documentation of the overall creative process. In the resulting artwork, the operations remain visible as the artist does not attempt to hide them. Curator Matthew Leifheit describes Bogush’s way of making digital alterations:

The way Bogush uses digital manipulation is earnest and up-front; he isn’t sneaky about the way he’s altering the images so it seems the photographs are still a document of something [...] Two documents exist: what came out of the camera and the trail of the artist’s hand.¹¹

The artist himself compares the process to painting, “the layers going down to the canvas.”¹² Bogush’s works, as all digital imag-

es today, exist in multiple versions online, shown on social media and on web pages. Having multiple manifestations, instead of being single originals they become more like iterations: They have a starting point from which they flow out and have several lives of their own, troubling the art world’s obsession with origins.

In the art market, there is naturally a need for originality concerning authenticity and provenance. Art historian Daniel Palmer notes the influence of major art museums, such as the Museum of Modern Art in New York, in the emerging art market for photography “demanding scarcity through limited editions.”¹³ Paul notes the same phenomenon in digital art: “The model of limited editions established by photography has been adopted by some digital artists whose work consists mostly of software, and this has allowed their art to enter the collections of major museums around the world.”¹⁴

Curator Charlotte Cotton uses the term “orphan image” to describe photographic images circulated so often online that their origins have become obscured. This orphan imagery “exists to be re-versioned and remixed.”¹⁵ In Bogush’s works, their photographic origin be-



comes obscured by the visual heaviness of the digital operations, but what is important is that their finitude remains under debate as well. The image becomes a platform for operations, rather than a singular object or work understood as an original image.

Bogush introduces the idea of the “un-decisive moment,”¹⁶ echoing the decisive moment, a concept made famous by photographer Henri Cartier-Bresson in the mid-1900s. While the latter designates the culmination point of the photographer’s waiting to capture the most important part of an ongoing moment, the point of finally clicking the shutter, Bogush’s un-decisive moment is playfully evocative of a constant lingering between endless options: “It’s the process of making things more generic, without history. Maybe even un-decisive.”¹⁷ The decisive moment is here extended into infinity, the works forever maintaining the possibility to morph again into something new (given that there exists in the future adequate hardware, software, and operators, human or other, to do so).

Layers

There are many fascinating features to explore in Photoshop, but the most important

one that should be introduced is the layered structure of the editing process and workspace. With the editing layers, operations are not performed on the image directly, but in an imagined space over it. One can create a separate adjustment layer, for example, for brightness, color balance, or contrast. One can also flip through different layers, to make them visible or invisible, to check the effect on the image. Once the image is ready to be brought out of the Photoshop workspace as an image file, one needs to “flatten the image,” to collapse the layers into one, after which they are no longer accessible for modification.¹⁸

Media theorist Lev Manovich proposes in his seminal book *The Language of New Media* (2001) the existence of electronic signals based on multiplicity instead of singularity:

In contrast to a permanent imprint in some material, a signal can be modified in real time by passing it through a filter or filters. [...] As a result, an electronic signal does not have a singular identity – a particular state qualitatively different from all other possible states.¹⁹

In Manovich’s view: “With new media, ‘malleability’ becomes ‘variability,’” and “the new media object is something that can exist in numerous versions and numerous incarna-

tions.”²⁰ This idea of multiple incarnations or manifestations brings with it a temporal dimension that always includes a possibility for change, variations, and iterations. The individual manifestations of the work then also become less significant in a way. In Bogush’s case especially, this fleetingness has a poetic quality, as the works in physical exhibitions are often printed on vinyl which is a material of very limited dexterity. This also poses some challenges for the preservation of the works in museum collections, for example, raising the question of what the work fundamentally is: Is it the source data file or its incarnation on a PVC curtain?

In the software working phase, the visual size of the image is somewhat irrelevant as one can zoom in and out of the image floating in the window of the workspace. When working with photographic images in the workspace of the software, two kinds of depth are present: the visual depth of the source photograph and the graphical, conceptual depth of the software in which the photograph is brought into an abstracted dimension where one can work inside and outside the photograph’s frame. Manovich describes this curious spatial quality of digital compositing



in a software workspace as happening in a two-and-half-dimensional space,²¹ not completely flat but not completely three-dimensional either.

Intentional Glitches

Liina Aalto-Setälä (b. 1990, Finland) starts her works in the series *Landscapes*, 2015 (Figures 3 and 4)—by collecting elements from nature, twigs, grass, flowers, or stones, and then uses them to build sculpture-like compositions, which she then photographs, and sometimes, also sets these nature sculptures on fire. The burning suggests a ritual or ceremonial performativity and has biblical connotations to the burning bush as a revelation or miraculous sign. It also alludes to magical rituals and healing practice of inhaling the fragrant smoke of burning plants. Selecting and compositing thus happen twice in Aalto-Setälä's work, first in the physical realm as she builds up her material for the photographs and then in the software as she further edits the results rendered by the software composing the final, digitally altered image.

Aalto-Setälä uses the Photoshop operation called Content-Aware Fill, and by in-

tentionally misusing it, creates pattern-like visual arrangements of elements from her landscape and nature photographs. The Content-Aware Fill operation is normally designed for image correction. For example, if there is an element in a photograph that one wants to remove, one can select the area to be taken out. The tool then copies the pixels of the surroundings to substitute for the removed part and blurs the outlines of the corrected area to make the transition look smooth. However, Aalto-Setälä uses the tool to intentionally create glitchy, recurrent, pattern-like visual results. This happens by choosing as the area to be removed a part of the image that is visually generous and detailed, so that the algorithm copies not a smooth surrounding but something that becomes a singular, repeated visual element. She then works further with these image results with other tools in Photoshop.²²

Flowers and plants have an ornamental character in visual presentations, and the recurrence of certain parts of the image evokes repetitive forms of patterns on fabric, echoing the joint history of computers and fabric production. One of the first

computers, called “the Analytical Engine,” created in England by Charles Babbage in the early 1800s (which is roughly at the same time that photography was invented), used punch cards for entering data and instructions, an idea borrowed from the Jacquard weaving loom. The Jacquard loom was a kind of graphics computer in itself, as it could create visually intricate and complex patterns on fabric by using a pre-programmed system.²³ Ada Lovelace, Babbage's supporter and one of the first computer programmers, described that the analytical engine “weaves algebraical patterns just as the Jacquard loom weaves flowers and leaves.”²⁴

The evolution of the algorithm is an interesting feature in Aalto-Setälä's works, as Photoshop is constantly being improved to render better and better results in image correction and editing. For an ongoing series like her *Landscapes*, started in 2015, the development of the algorithm used by the software also affects the image results, making the effect more subtle and thus, not as easily detected. Seen in this light, her works also become documentation of the algorithm's development.





Figure 3. Liina Aalto-Setälä, From the series *Landscapes*, 2015- .



Figure 4. Liina Aalto-Setälä, From the series *Landscapes*, 2015- .



Collaboration as a Model

In its early days, photography was a practice that often required the collaborative work of more than one person. Artist and scholar Yanaï Toister reminds us that some photography studios even had production lines with a number of people taking part in the processing of the photographs, often children to carry out the printing and women to do the retouching.²⁵ Similarly in new media art, as Christiane Paul observes, the artistic process depends heavily on collaborative types of working between artists, programmers, researchers, designers, and scientists.²⁶

Bogush and Aalto-Setälä work with the algorithm, producing images in which the outcome is more open than when working alone. In their practices, surrendering to the pre-given quality of the software and working with chance are important. Selecting some software-generated outcomes over others becomes central. Manovich argues that in computer culture authentic creation is replaced by selection from a menu or library, making the modification of an already existing signal the new principle, as opposed to the traditional idea of an artist creating something “from scratch.”²⁷ Bogush and Aal-

to-Setälä tend not to select software-created image outcomes that are too graphical. Instead, there should always be some imperfection or tension in the image to make it interesting.²⁸

Another explicit example of photographic work created in collaboration with software is Aaron Hegert’s (b. 1982, USA) series *Shallow Learning* (2018). In this series, the collaboration is not only with photography editing software, but also with a search engine. In the series Hegert fed photographs he had taken into Google Image Search, which was created to find the origin of images posted online. Because the starting images were Hegert’s own and not published anywhere, the algorithm could not find their origin, but instead recommended a range of similar images. Hegert then chose some of these recommendations and further worked the starting photograph and the algorithm’s suggestion into a composite of two images, using Photoshop’s Content-Aware Fill to blur the boundary in between. Unlike in Aalto-Setälä’s works, in Hegert’s series Content-Aware Fill is used in its original purpose of image correction, to visually help merge together two separate images.

The results are often surprising, and slightly disturbing. A red cloud of smoke is guessed by the algorithm to be a burning field, and a leafless tree branch a rusty metal structure. The suggestions from the search engine work in a similar way as the suggestions in any textual search do when one misspells something or searches for something not found: “Did you mean...?” The name of the series points to deep learning, a concept used in machine learning, of artificial neural networks being able to learn unsupervised, from data.

In *Shallow Learning* #30, 2018 (Figure 5), one comes to think of the indexical relation between smoke and fire. Smoke signals have been used all over the world since ancient times to communicate visually over long distances before the development of modern communication devices. Blurring the outlines of separate image components is how the Content-Aware Fill function tries to trick the viewer to see the composite image as smooth and continuous, bringing to mind the phrase “smoke and mirrors,” which refers to obscuring a truth with misleading information and has a historical background in tricking the audience of a magic show with





Figure 5. Aaron Hegert, *Shallow Learning #30*, 2018.

visual distractions. This double role of smoke as a visual/symbolic subject and as a means of digital operation is similarly manifested in Aalto-Setälä's works, as seen above.

While a human viewer might look for similarities through meaning, the image search algorithm is based on visual evidence. What a human might see in Hegert's photograph in *Shallow Learning #39*, 2018 (Figure 6) as a leafless tree branch against a cloudless blue sky can, in contrast, be read by the algorithm as something like an angular form against a smooth background of a certain shade of blue. And while a human viewer might tend to disregard the blue "background" in favor of the "subject" of the source photograph, the tree, the blue area, nevertheless, comprises the majority of the picture plane and might not be seen as less significant by the algorithm. Accordingly, the algorithm's suggestion is for the most part quite right, as the hue of the blue area is rather similar in the two images.

Automatization as a Creative Engine

Collaborative forms of production challenge the role of the photographer as a single author, which is a prominent theme in dis-

cussions on photography's status as an art form. In recent research on photography, particularly in relation to digital photography, this single-author model has come under debate. Artist and writer David Bate argues: "To recognize that cameras and computers now belong together is also to de-center the role of the 'photographer.'"²⁹

Automatic processes as artistic and creative tools are characteristic not only of photography but also have been used in particular in poetry and music. Artist, curator, and theoretician Peter Weibel observes, "Mathematical aids and even small mechanical contraptions are known to have been used by composers from Bach to Mozart", and continues, "A central role is played in modern music by serial and static processes, by techniques and algorithms which are aleatoric and stochastic, permutative and combinatorial, recursive and fractal."³⁰ Paul, in turn, illustrates the connection between digital art and previous art movements, such as Dadaist poetry, Fluxus, and conceptual art, all of which used automatic processes as a means of creation. She draws a connection between digital algorithmic art and the general idea of rules and instructions being a ba-

sis for creating art, establishing an "interplay of randomness and control."³¹

Digital artist Edmond Couchot writes that with digital images, and through interfaces, there is a "new feature of subjectivity appearing," one that is fractal, a possibility, distributed through networks rather than localized in one point.³² This new subjectivity could be thought of as latent, formed within and through the points of contact. It could be seen as an agency that is negotiated between human, hardware, software, interface, and image. In this new kind of subjectivity, Couchot illustrates, "The position of object, image and subject is no longer linear." Instead, "a new perceptive habitus is emerging."³³ There is a change of focus from positions to composition, to non-linearity and non-narrativity.

Realities: Tools, Toys, Metaphors

In a much-cited quote, art historian John Tagg states, "every photograph is the result of specific and, in every sense, significant distortions which render its relation to any prior reality deeply problematic and raise the question of the determining level of the material apparatus and of the social practices within which photography takes place."³⁴





Figure 6. Aaron Heger, *Shallow Learning #39*, 2018.

Tagg states: “We have no choice but to work with the reality we have: the reality of the paper print, the material item.” He adds, significantly: “What is real is not just the material item but also the discursive system of which the image it bears is part.”³⁵ This was published in 1988, and since then, the *reality that we have*, both materially and discursively, has become something quite different.

Manovich compares the digital objects used in computers, such as files and folders on desktops, to metaphors, as they do not exist in a strictly physical dimension but rather as linguistic elements, to be used within a system or structure, to organize and conceptualize data. According to him, the human-computer-interface “also includes ways of manipulating data, that is, a grammar of meaningful actions that the user can perform on it.”³⁶

Similarly, media philosopher and photography theorist Vilém Flusser presented in 1983 the idea that “the camera is not a tool but a plaything, and a photographer is not a worker but a player,”³⁷ as the camera does not alter the physical world, but rather our conceptions of it, shifting power from the material to the symbolic. It is important

to emphasize that the opposition here is between material/symbolic, not material/immaterial. However, although the camera might be thought not to alter the physical world, it adds things to the world, by producing photographs.

Our sense of reality is closely linked to touching, and touch has—alongside vision—been associated with truth and authenticity. Media archaeologist and curator Erkki Huhtamo describes touching as “a complement to the act of looking” in early museums, descending from private collections and cabinets of curiosity.³⁸ Touching the artifacts on display might have been thought to serve as a guarantee of their authenticity, and touching was not only allowed but often, also encouraged.³⁹

Somatics, Haptics, and Embodiment

The word “digital” has a corporeal etymology, coming from the Latin *digitus*, meaning finger and being reminiscent of the pointing or signaling function of these body parts, also used for counting. Aalto-Setälä likes to use a mouse for composing her work, whereas Bogush and Hegert prefer the trackpad of a laptop. Bogush, at times, also uses an iPad

tablet with a pencil-like stylus, after which, he says, it is very difficult to go back to the clumsiness of the trackpad.⁴⁰

Touching the screen or trackpad raises the topic of indexicality, a core question in the philosophy of photography, linked to the idea of a photograph being a direct imprint of its subject. Of course, in a digital photograph, this directness has been contested from the start, as the visual information is translated into data by the camera, making it programmable, unlike in an analogue photograph, in which the light reflected from the subject directly burns the image on the surface of the film.⁴¹

Bearing in mind this inherent impossibility of a digital direct indexicality, we, nevertheless, touch the screens and trackpads of laptops—and they respond to our touch. Art historian and curator Anna-Kaisa Rastenberger writes of the tactile qualities of touching screens:

An unexpectedly haptic experience is generated when we navigate toward and view photographs in virtual environments through technological devices such as smartphones and tablets, which form their own material network. Indeed, metaphors of skin and touch frequently recur in descriptions of these image-materializing devices.⁴²



The problem with analyzing photographic works that utilize digital means of creation is often that the traces of the digital alterations are not as easily visible in the final work, in contrast to haptic marks on the surface, such as traces of the artist's hands and tools can be in a drawing, painting, or sculpture. In the work of Bogush, Aalto-Setälä, and Hegert, however, many of these visible traces of operations remain, as visual proof of the artist's presence.

Flusser refers to images as "significant surfaces,"⁴³ and although today the paper surface of a photograph has, in great part, been substituted by different kinds of screens, screens are significant surfaces as well, if not even more so, as they require interaction with the user or viewer. Bate compares the photographic print with a photographic image on a screen, contemplating the print's characteristic passivity: "the digital image, lit as an illuminated electronic screen, is an active computational process (the print is a passive form), so the screen is an (active) interface between a computer code and the visual simulation of the photographic image."⁴⁴

Screens, Virtual Exhibitions, Online Environments

It is not to be overlooked that screens have become the dominant way of seeing photographs and being in contact with them.⁴⁵ It is telling that I have first encountered the artworks analyzed here online: through social media, the artists' own websites, and Hegert's work in the virtual exhibition *When Images Collide* described above.⁴⁶ In the exhibition, Hegert's works which are discussed here are displayed in a conventional museum exhibition manner as wall-mounted unframed prints.

Hegert's works acquire an interesting layer through the virtual exhibition, as the slight distortions resulting from moving the screen make them feel even more unfamiliar and strange, accentuating the effect already there through their non-human-vision construction. Hegert describes his motivation for making the series:

I have observed that the digital tools I use in my practice as an artist are beginning to do more of their own thinking. And just as I wonder what I can learn about the world by looking at images, I now also wonder what images are learning about the world by looking at each other.⁴⁷

A virtual online exhibition is profoundly different as an experience compared to a physical exhibition, as one can control the two-dimensional screen view by dragging and zooming, and take screenshots. The screen is simultaneously a window and a control panel,⁴⁸ and the "moving around" happens through designated spots from which the documentation photographs have been taken.⁴⁹ An online exhibition also "continues to exist indefinitely (until some party fails in sustaining it)."⁵⁰

The virtually extended physical exhibition is only one way of exhibiting art online, and different kinds of platforms for art that take place exclusively online, virtual and net art, have been gaining importance since the early 1990s.⁵¹ Paul points out that "[o]ne of the inherent promises of net art was the opportunity to establish an 'independent' art world that could function outside of the framework of the institution and its systems of validation."⁵² Although the works of Bogush, Aalto-Setälä, and Hegert are not strictly net art, they are often exhibited in online environments, whether websites, social media, or virtual exhibitions, which seem like a "natural habitat"⁵³ for them, if one can use such organic metaphors in this context.



Conclusion

Photography and digital art are fields in which meanings are made through apparently smooth surfaces, the surface of the photographic film or print, and the glass surface of the computer or mobile device screen. Consequently, the materialities of these image making methods are easily overlooked—or seen through.⁵⁴ In the works of Bogush, Aalto-Setälä, and Hegert, the software operations become visual content and subject matter as they are not hidden but made to be seen, therefore they must be analyzed as part of the image, and from the viewpoint of artistic production. As a result, describing how the editing software functions becomes important in describing the works.

The material (and immaterial) aspects of hardware and software are closely linked to questions of the maintenance and display of new media artworks. Cotton argues: “Our arrival at the long-awaited destination where software becomes a medium of the genre of contemporary art photography requires us to acknowledge other forms of authorship in photography’s modalities of editing, archiving and curating.”⁵⁵ To open the field up for a more productive and profound analysis

we can, instead of talking about “digital photography,” switch to talking about the digital environments or digital conditions of working with photography. However, as Bate illustrates:

The temptation to homogenize the consequences of these different digital issues must be resisted. Just as the internet is decentred and plural, so are its consequences. It is not, in calling this situation a ‘digital condition’, that they can all be gathered up as one thing, but rather to begin to identify the conditions in which their differences emerge.⁵⁶

The fact that digital or new media art is continuously evolving calls for new ways of conceptualizing and making meaning of its many forms. Manovich and Paul emphasize the need for new concepts and vocabulary in describing and analyzing new media and new media art forms.⁵⁷ In relation to this, Bate notes an important fact concerning the novel ways in which words are now being used in databases: “The old relations between images and language are modified; the use of ‘caption’ texts are no longer secondary, but a primary search tool in data tagged images.”⁵⁸ The constant expansion of the field requires an attitude of openness and flexibility in research.

The results of the digital interventions of Bogush, Aalto-Setälä, and Hegert are more

than just images. In the process, a whole new environment is created in which new collaborative models for agency and authorship are produced, ones that challenge the notion of the artist as a single originator, and ones that acknowledge the agencies of the hardware and software. The software is no longer regarded as a tool, but as a partner: making suggestions and generating outcomes for the artists to work with. A shift of focus follows, from human-machine interactions to co-creation and negotiated agencies, distributed through networks of human and nonhuman agents. Automatization becomes a generative engine, and the photography editing software a means for creation, rather than a mere post-production and retouching tool.



Notes

- 1 “When Images Collide,” Biennale für Aktuelle Fotografie, curated by David Company. Wilhelm Hack Museum, Ludwigshafen, Germany, February 29, 2020, to September 13, 2020. Extended to an online virtual exhibition. Accessed June 14, 2020, <https://biennalefotografie.de/en/edition/virtual-tour/when-images-collide>
- 2 Thus, the software to which I refer in this article is restricted to Photoshop, although there are several others, such as Serif’s Affinity Photo and Gimp. The latter is particularly interesting because the source code of the software can be modified by the user as it is an open-source program. There are also artists whose work combines working with photographs and the wider field of software art, who create their own software (like Jarkko Räsänen and Tuomo Rainio, just to name a few), which would be an intriguing topic for further research, falling outside the scope of this article. On Rainio’s work, see Aino Nurmesjärvi, “Beyond Human Understanding: Creating New Language and Visuals on the Web,” *FNG Research*, no. 1 (2018), accessed June 14, 2020, https://fngresearch.files.wordpress.com/2018/01/fngr_2018-1_nurmesjarvi_aino_article1.pdf; on software art, see Christiane Paul, *Digital Art* (2003; repr., London: Thames & Hudson, 2015), 124; Andreas Broeckmann, “Image, Process, Performance, Machine: Aspects of an Aesthetics of the Machinic,” in *MediaArtHistories*, ed. Oliver Grau (Cambridge, MA: MIT Press, 2007), 198.
- 3 For a parallel discussion on the problem regarding digital photography as seen in opposition to and as discontinuous with analogue photography, see David Bate, “The Digital Condition of Photography: Cameras, Computers and Display,” in *The Photographic Image in Digital Culture*, ed. Martin Lister (1995; repr., London: Routledge, 2013), 85–86.
- 4 Paul, *Digital Art*, 7–8.

5 Ibid.

6 Paul, *Digital Art*, 8.

7 William J. Mitchell, *The Reconfigured Eye: Visual Truth in the Post-Photographic Era* (Cambridge, MA: MIT Press, 1992), 7.

8 Broeckmann, “Image, Process, Performance, Machine,” 197.

9 Andrey Bogush, interview by the author, November 20, 2019.

10 Ibid.

11 Matthew Leifheit, “A Loving Destruction,” *FOAM Magazine*, no. 39 (2014): 218–19.

12 Ibid.

13 Daniel Palmer, “A Collaborative Turn in Contemporary Photography?,” *Photographies* 6, no. 1 (2013): 117, accessed June 14, 2020, <https://doi.org/10.1080/17540763.2013.788843>

14 Paul, *Digital Art*, 24.

15 Charlotte Cotton, “A Photographic Moment,” *FOAM Magazine*, no. 38 (2014): 140.

16 Leifheit, “A Loving Destruction,” 219.

17 Ibid.

18 See Lev Manovich, *The Language of New Media* (Cambridge, MA: MIT Press, 2001), 139.

19 Manovich, *The Language of New Media*, 132.

20 Ibid., 134.

21 Manovich, *The Language of New Media*, 157.

22 Liina Aalto-Setälä, interview by the author, November 20, 2019.

23 See Manovich, *The Language of New Media*, 21–22.

24 Quoted in Manovich, *The Language of New Media*, 22.

25 Yanai Toister, “Photography: Love’s Labour’s Lost,” *Photographies* 12, no. 1 (2018): 120, accessed June 14, 2020, <https://doi.org/10.1080/17540763.2018.1501726>

26 Christiane Paul, “The Myth of Immateriality: Presenting and Preserving New Media,” in *MediaArtHistories*, ed. Oliver Grau (Cambridge, MA: MIT Press, 2007), 256.

27 See Manovich, *The Language of New Media*, 124–26.

28 Andrey Bogush, interview by the author, November 20, 2019. Liina Aalto-Setälä, interview by the author, November 20, 2019.

29 Bate, “The Digital Condition of Photography,”

79. See also Toister, “Photography: Love’s Labour’s Lost,” *passim*; and Palmer, “A Collaborative Turn in Contemporary Photography?,” *passim*.

30 Peter Weibel, “It Is Forbidden Not to Touch: Some Remarks on the (Forgotten Parts of the) History of Interactivity and Virtuality,” in *MediaArtHistories*, ed. Oliver Grau (Cambridge, MA: MIT Press, 2007), 24.

31 Paul, *Digital Art*, 11.

32 Edmond Couchot, “The Automatization of Figurative Techniques: Toward the Autonomous Image,” in *MediaArtHistories*, ed. Oliver Grau (Cambridge, MA: MIT Press, 2007), 183.

33 Ibid. On the impact of agencies becoming distributed between humans and computational processes in curating and exhibition design, see Paul, “The Myth of Immateriality,” 266–68.

34 John Tagg, *The Burden of Representation: Essays on Photographies and Histories* (New York: Palgrave Macmillan, 1988), 2. Original emphasis.

35 Ibid., 4.

36 Manovich, *The Language of New Media*, 69.

37 Vilém Flusser, *Towards a Philosophy of Photography*, trans. Anthony Mathews (1983; repr., London: Reaktion Books, 2014), 27.

38 Erkki Huhtamo, “Twin–Touch–Test–Redux: Media Archeological Approach to Art, Interactivity and Tactility,” in *MediaArtHistories*, ed. Oliver Grau (Cambridge, MA: MIT Press, 2007), 76.

39 Ibid.

40 Liina Aalto-Setälä, interview by the author, November 20, 2019. Andrey Bogush, interview by the author, November 20, 2019. Aaron Hegert, e-mail correspondence with the author, June 2020.

41 The question of indexicality is one of the most discussed issues, if not *the* most discussed, in



photography theory. Daniel Rubinstein and Katrina Sluis refer to it tellingly as “the porridge of the index”: Daniel Rubinstein and Katrina Sluis, “The Digital Image in Photographic Culture: Algorithmic Photography and the Crisis of Representation,” in *The Photographic Image in Digital Culture*, ed. Martin Lister (1995; repr., London: Routledge, 2013), 27. For a discussion on indexicality in relation to digital photography as a new medium in the 1990s and the impact of digital photography on photography’s connection to truth, see Mitchell, *The Reconfigured Eye*. For a more recent account on indexicality, and especially its meaning for the materiality of the digital photographic image, see Janne Seppänen, “Unruly Representation: Materiality, Indexicality and Agency of the Photographic Trace,” *Photographies* 10, no. 1 (2017), accessed June 14, 2020, <https://doi.org/10.1080/17540763.2016.1258658>

42 Anna-Kaisa Rastenberger, “Why Exhibit? Affective Spectatorship and the Gaze from Somewhere,” in *Why Exhibit? Positions on Exhibiting Photographies*, eds. Anna-Kaisa Rastenberger and Iris Sikking (Amsterdam: Fw:Books, 2018), 104–5; on machines as “a new touchable realm,” see Huhtamo, “Twin–Touch–Test–Redux,” 78–79.

43 Flusser, *Towards a Philosophy of Photography*, 8.

44 Bate, “The Digital Condition of Photography,” 89.

45 Bate, “The Digital Condition of Photography,” 89; Rastenberger, “Why Exhibit,” 104.

46 See note 1.

47 <http://www.aaronhegert.com/shallow-learning>, accessed June 14, 2020.

48 Manovich, *The Language of New Media*, 16, 90.

49 On the malleability of the screen image, see Bate, “The Digital Condition of Photography,” 89.

50 Paul, “The Myth of Immateriality,” 265. See also Rubinstein and Sluis, “The Digital Image in Photographic Culture,” 31.

51 See Paul, “The Myth of Immateriality,” 264.

52 Ibid.

53 I borrow this expression from Paul, “The Myth of

Immateriality,” 264.

54 See Jane Vuorinen and Rebecca Najdowski, “Surface Tension: Material Intra-Actions within Photography,” *RUUKKU – International Journal for Artistic Research*, no. 9 (2018), accessed June 14, 2020, <https://www.researchcatalogue.net/view/371917/371918>

55 Cotton, “A Photographic Moment,” 140.

56 Bate, “The Digital Condition of Photography,” 93.

57 See Manovich, *The Language of New Media*, 121; Paul, “The Myth of Immateriality,” 268–70.

58 Bate, “The Digital Condition of Photography,” 93.

MA Jane Vuorinen is preparing a doctoral dissertation at the University of Turku on questions of photographic materialities in contemporary art.

