Paintings or Photographs?
On Error Transitions between Media Amplified by Artificial Neural Networks

Gemälde oder Fotografien?
Über Fehlerübertragungen zwischen Medien, verstärkt durch neuronale Netzwerke

Ana Peraica

Abstract

EN In the digital age, computer generated images and reproductions are increasingly employed to emulate paintings. The relationship between painting and photography can be re-examined in the post-photography era when artificial intelligence creates photolike objects.
Artificial neural networks are learning and producing systems, also used in the investigation and making of art. They have been used to study, reconstruct, but also to autonomously create art, or they have been employed in art history and art production, besides notably also in the sciences. Artificial intelligence can generate a new work of art based on an already known painterly style, such as Rembrandt's or Goya's etchings, but it can also create art autonomously. New artefacts can hardly be distinguished from digital painting in terms of quality. These transfers continue to undercut any assumption of the medium's purity, while also highlighting the stage of development of each medium on which they reflect and mirror. This article examines the interrelations between the two institutionally and aesthetically distinct media histories of photography and painting, highlighting their points of overlap.

DE Im digitalen Zeitalter werden computergenerierte Bilder und Reproduktionen zunehmend eingesetzt, um Gemälde nachzuahmen. Die Beziehung zwischen Malerei und Fotografie kann im post-fotografischen Zeitalter neu betrachtet werden, da künstliche Intelligenz fotoähnliche Objekte erschafft.
Künstliche neuronale Netzwerke sind Lern- und Produktionssysteme, die auch in der Kunstproduktion und -forschung verwendet werden. Sie dienen dazu, Kunst zu analysieren, zu rekonstruieren oder sogar eigenständig zu schaffen. Zudem finden sie Anwendung in der Kunstgeschichte, der Kunstproduktion und weiteren Disziplinen, insbesondere in den Naturwissenschaften. Künstliche Intelligenz kann ein neues Kunstwerk auf der Basis eines bereits bekannten malerischen Stils, wie dem von Rembrandt oder Goyas Radierungen, generieren, aber auch eigenständig Kunst schaffen. Neue Artefakte sind in ihrer Qualität kaum von digitaler Malerei zu unterscheiden. Diese Übertragungen untergraben weiterhin jede Annahme von der Reinheit eines Mediums und werfen gleichzeitig ein Licht auf den Entwicklungsstand der jeweiligen Medien, die sie reflektieren und spiegeln.
Dieser Artikel untersucht die Wechselbeziehungen zwischen den institutionell und ästhetisch unterschiedlichen Mediengeschichten von Fotografie und Malerei und hebt dabei ihre Schnittpunkte hervor.

> You know exactly what I think of photography.
> I would like to see it make
> people despise painting until something
> else will make photography unbearable.
> (Marcel Duchamp, in a letter to Alfred Stieglitz)[1]

The stabilization of the photographic image has had a significant impact on visual culture. In addition to bringing new visual forms and genres, it has also had an impact on ›earlier‹ media, particularly painting.

Few art historians have looked on both how photographic documentation was used in the painting process and on its impact on style, among them the most notable Aaron Scharf.[2] Scharf has mapped many artistic techniques, including realism, impressionism, dynamism, surrealism, abstraction, Pop Art, and hyperrealism, formed in relationship to the invention but also changes of the photographic medium. According to his insight, each painterly style corresponded or reacted to a photographic technology available at the time, ranging from the early low-tech photography to motion photography. Other authors continued elaborating how painting was influenced by inventions of aerial photography, Polaroid, C-print process, and home use snapshot photography. As a result of these analysis, it can be inferred that not only has the advent of the photographic technique inspired painting, but that the history of photography has also influenced painting continuously. This tense relationship between painting and photography can be questioned anew in the post-photography era, in which technology of photography has evolved again,[3] and the photography medium's fundamentals have been altered by new post-digital technologies.

Postdigital photography can be defined by the ubiquity of the photographic image due to photographic camera being inbuilt in various other technologies, as mobile phones, CCTV networks and satellites, but also on the autonomous creation of photolike objects created by artificial intelligence, more precisely — artificial neural networks. Due to such technological changes, photographs today have become omnipresent, but also paradoxically fractured and invisible: Machines make, digest, and devour them.

This article will re-examine the new relationship between painting and photography that is now the result of machine intelligence, namely artificial

1 Quoted in Crimp 1981, p. 75.
2 Scharf 1974; Shapiro 2014.
3 Cf. Tomas 1988; Rubinstein 2020.

neural networks, in its ubiquity, fractureness and invisibility, being new qualities of the image that cannot be distinctively described as painterly or photographic. After a more detailed introduction to the theme of photography and painting, mostly based on my previous writings on the theme, this paper will focus on two types of painterly structures. It will analyze structures created after photographs, such as pointillist brushstrokes introduced from the granular photographic system into Claude Monet's impressionistic painting, and glitchy structures in semi-supervised GAN photography works. It concludes with issues of painting form and structure, as well as machine imaging. Challenging definitions that analyze paintings different from photographs due to the representative capacity of the latter, this chapter shows how the new painterly products made on photographic base only indicate the history of previous transitions. Or, more precisely, how the original transit of qualities and unique media errors from photography to painting now re-appears in different media, redefining the media borders.

1 Artificial neural networks' painterly style

Artificial neural networks are artificial learning and producing systems, rapidly developing in the last few years, and also used in learning and production of art. They have been used to study, reconstruct, but also to autonomously make art, or they have been employed in art history and art production, among other things, notably in sciences.[4] There are more sorts of networks, each with its unique set of capabilities, specialized for own function, ranging from simple style transfer and machine vision to deep learning.

Style transfer seems to be the simplest action, and in continuity with many earlier techniques of style illustration, ranging from simple add-ins and photo processing software to autonomous programs applying style. But, while the output of neural networks may appear to be similar to that of a simple filter or add-in program, which has been integrated in image processing software such as Adobe Photoshop since its inception, these applications operate on a significantly more intricate level. Such neural networks, in particular, do not apply style as described by art historians, but instead they mine it and apply their own definition. Google introduced

4 Peraica 2021.

one of the earliest of such style transition systems: Google programmer Alexander Mordvintsev trained *Deep Dream*, Google's style application from 2015, which was a type of game-changer.[5] *CycleGAN* and *Pix2Pix* were the next artificial neural networks to emerge. Today's technology, which also employs a convolutional neural network (CNN), can recognize picture styles and reapply them. Leon Gatys termed this as »neural style transfer« (NST) in his 2016 study on Van Gogh style transfer.[6] Finally, projects as Simon Colton's *Painting Fool* are able to apply more than a thousand painterly styles on the photographic image, in a way ridiculing the history of the medium.[7]

Along with new systems, *Deep Dream* also evolved. It currently offers few tools: deep style, which mines the style of one picture and applies it to another; thin style, which does the same but more crudely; and deep dream itself, which shows what the artificial neural network perceives in the image, or uncovers the learning process. The last has been also the center of a collaboration between a well-known painter, Luc Tuymans, and a media artist, Luc Steels. In their work titled *Flow? How AI looks at art* (2019), AI examined Tuyman's artworks and mapped their styles.[8] Similar techniques, such as attributing style, have been created for art historical study.

In several recent projects, different painting styles and periods were distinguished and categorized using artificial neural networks, or even merged with photographs.[9] In addition to style attribution, such neural networks are successful in author attribution, as demonstrated by Frank and Frank, detecting originals from fakes in Rembrandt's paintings.[10] However, they can also generate a new piece of art based on a known artistic painterly style, as in the project *The Next Rembrandt*, coproduced by Rembrandthuijs, ING and Walter Thompson, or in a project by Aarati Akkapeddi in collaboration with El Museo Goya Fundacion Ibercaja in Zaragoza, Spain, which trained artificial neural networks on Goya's etchings from *Los Capri-*

5 Google: *Deep Dream Generator*, 2015. URL: https://deepdreamgenerator.com/ (Accessed 24.1.2023).
6 Gatys 2016.
7 Simon Colton, *The Painting Fool*, 2012. URL: http://www.thepaintingfool.com/ (Accessed 24.1.2023).
8 See https://gluon.be/art-and-research/projects/3177/flow-2019-en-cours/ (Accessed 24.1.2023).
9 Semeraro 2016.
10 Frank und Frank 2020; Frank 2021.

chos, *Los Desastres de la Guera* and *Los Disparates*. Named artificial neural network *After Goya*, gaining an understanding of the master's approach even began to propose new variations of his etchings.[11] However, systems are not always led to produce a successful result; they are occasionally led to pick their own courses, which is believed to illustrate machine creativity. So, Hugo Caselles-Dupré, Pierre Fautrel, and Gauthier Vernier of the *Obvious* collective created an artificial neural network working on 50,000 photographic copies of portraits from the 14th to the 20th centuries. It resulted with twelve painterly portraits making a serial named *La Famille de Belamy* (2018), and one of these pieces is known for being sold for nearly half a million dollars at a Christie's auction. Yet, although named ›portraits‹ these portraits hardly resemble portraits from sets on which they were trained.

The portrait genre is inextricably linked to the sitter's existence (predicate function). While this genre is not trustworthy in terms of traits given to a face, it is rigid in terms of portraying someone. Jean-Luc Nancy stated that the portrait depicts someone who must exist/or existed. He defined portraying by an action which »paints a subject only by setting itself within a subject-relation; as such, it sees a putative subject (me, you, the painter) within relation to the subject that is being exposed. It sets a subject within a subject-relation and so within a relation to self«.[12] Portraits, according to Nancy, establishe a triple relation: the »portrait resembles (me), the portrait recalls (me), the portrait looks (at me)«.[13] Thus, portraits might depict living or deceased individuals, but in both cases, they revive memory through gaze. This has been even more visible in the photographic medium.[14]

The expansion of the original field of portraiture was aided by photographic media, which transcended the uniqueness, availability, and specific purposes of portrait paintings. However, Johnstone and Imber assert that photography's development was instrumental in eroding the rigid correlations of similarity established by classical aesthetics, hence precipitating the emergence of new portrait genres launched by abstract painting. So, authors write »to continue to insist on physiognomic resemblance […]

11 Aarati Akkapeddi: *After Goya*, 2020. https://aarati.me/#ag (Accessed 24.1.2023).
12 Nancy 2018, p. 19.
13 Ibid., p. 20.
14 Cf. Freeland 2007.

would be to ossify what should be a vital and evolving form«.[15] Johnstone and Imper thus define *antiportraits*.[16]

The theme of antiportraiture was in the center of exhibitions such as *Face Off: The Portrait in Recent Art* (Institute of Contemporary Art, Philadelphia, 1993), *About Face* (Hayward Gallery, London, 2004) or *Photography and the Death of the Portrait, Striking Resemblance: Changing Art of Portraiture* (Zimmerli Art Museum, Rutgers, 2014). They discussed several aspects of the genre's restrictive definitions, such as mimicking the sitter's face, introducing themes such as abstract portraiture, identity conceptualization, and portrait enactment, while the most recent as *Striking Resemblance* introduced themes such as current technological data portraying and biomedical trace. The theme of antiportraiture is especially important in the times of data selves. However, while being made of data, current portraiture made by artificial neural networks fails in identification. While we live in an era when data more precisely represents individuals than photographs, artificial neural network portraits, ironically, represent no sitter.

New portraits merely have a passing resemblance to human portraits from paintings, at all.[17] Some of them do not have most human facial traits, so for example the most famous portrait of Edmond Belamy, sold at Christie's, lacks a nose.[18] Their heads are occasionally left incomplete, fade into the background, or are cropped in the frame in ways that most humans would not decide to cut visually. The painterly approach is shabby and rough, evoking the terrible restoration of Christ that has become a meme, and its flaws are particularly obvious when human faces have greater details.[19] On the other hand, the backgrounds are smooth. A bizarre color gamut, different and unique for each picture, is what distinguishes these images the most, aside from unfishiness, strange crops, and glitches. Despite having no ability for sketching autonomously or creating a nice composition, the artificial neural network performs better in terms of picture colors and sub-color toning. Color preferences can sometimes lead to color field abstraction, as seen in the picture of *Le Duc De Belamy* (2018),

15 Imber und Johnstone 2021, p. 38.
16 Ibid.
17 Obvious Collective: *La familie Belamy*, 2018. URL: https://obvious-art.com/la-famill e-belamy/ (Accessed 24.1.2023).
18 This portrait was famous for being sold at Christie auction to an anonymous buyer for nearly half a million dollars.
19 Arkenbout, Wilson et al. 2021.

also part of the Belamy family series, where the entire backdrop and coat are enveloped in a deep blue, with only a field of filthy orange standing out. In every example, the picture glitch evokes the pointillism of the brush stroke.

A conceptually similar project is Ahmed Elgammal's *AICAN network*.[20] It was trained on an even larger set of 80 000 great paintings from art history museums and archives. AICAN's serial *Faceless Portrait Transcending Times* (2019) is a collection of photos that can only be described as portraits in the broadest sense. When these networks are calculated, the face stays on the suggestive level of the Rorschach test, and it's possible that it's machine pareidolia, identifying faces in data noise. However, unlike Obvious' Belamy family series, AICAN's color choices are more extreme, frequently opting for chiaroscuro drama with a dark backdrop and a luminous mass in the middle of the picture. AICAN appears to be influenced by Fauvism and American Minimalism when looking at other works. Moreover, the surfaces of AICAN, on the other hand, are less pointillistic. However, both the photographs of the Belamy family by the Obvious group and the AICAN photos reveal that, rather than preferring realism, the artificial neural network in its learning process ›prefers‹ a non-realist aesthetic. There is a similar situation with photographs. Mike Tyka's *Imaginary People* (2017) work indicates that the same sort of malfunction may be seen even when utilizing photographs.[21] Images made out of photographs become painted copies of pictures rather than fresh photographs. But why does that particular flaw occur in the creation of artificial neural network art, or ›AI art‹, as Zylinska coined it? [22]

One of the reasons these artworks look so painterly is that, although being created on photographic bases, AI has no experience with reality against which to evaluate the image, and instead works only on the representation model. Consequently, although being formed from photographic material, pictures styled by artificial neural networks are not indexical, and even when they appear to be photographs, they are more akin to paintings. The other is that networks are not totally monitored by humans, or in programming language — supervised, but their creators choose to look at the machine's own creation rather than subordinating it to realist purposes

20 Ahmed Elgammal: *AICAN*. URL: https://aican.io/ (Accessed 24.1.2023).

21 Mike Tyka, *Imaginary People*, 2017. URL: https://miketyka.com/?s=faces (Accessed 24.1.2023).

22 Zylinska 2020.

and limiting its capabilities to a simple depiction and replication of reality. Finally, these works resemble paintings because AI focuses on patterns in the process of learning, rather than forms and shapes and their existences. The reason is, as Miller defines in his *The Artist in the Machine,* that

> neural networks deal not with statements about a painting, but with numbers. To interchange the pixels in a painting with the pixels in a photograph would be extremely complex, if possible at all. But in deep neural networks, each pixel is replaced with the numbers that encode it, as are the pixels in the photograph to be altered. The question is how to mix the numbers in a photograph with those in a classic painting so as to create something new.[23]

Or simplified: AI sees textures at places where we rather see shapes.[24]

To approach these artefacts, a history of interaction between painting and photography, which is utilized in these procedures, may be examined, even in circumstances where paintings are processed.

2 Paintings or photographs (overview of histories and theories)

Photography is thought to have been invented by painters looking for a more accurate portrayal.[25] There are few pieces of evidence of that claim. Leonardo da Vinci's *Camera obscura* drawing from the *Codex Atlanticus* (1490/95) is frequently used to exemplify the theory. Athanasius Kircher drew a similar instrument, as well as a large-scale building, in his *Ars Magna Lucis et Umbrae* (1646). Some writers, such as Latto and Harper, established that artists utilized an instrument akin to the camera obscura even before Leonardo, such as Mantegna in his 1490 painting *The Dead Body of Christ*.[26] They show that this painting has an optical distortion that is unique to telephoto lenses. Philip Steadman, like Latto and Harper in case of Mantegna, presented a slew of arguments to support the use of camera obscura in Vermeer van Delft's paintings.[27] Mantegna and Vermeer appear to have made advantage of the camera obscura's optical projection.

23 Miller 2019, p. 84.
24 Cf. Geirhos, Rubish et al. 2018.
25 Galassi 1981.
26 Harper und Latto 2007.
27 Steadman 2001.

Chemical inventions for anchoring that projection into the surface, whether positive or negative, resulted in the introduction of new forms of image projection exploitation. A direct painting on the photographic base was one of them.[28]

Nonetheless, even formally recognized as an innovation, not all painters were enamored with photographic picture technology. Despite being seen as a painter's creation and tool, many painters were enraged by the discovery of photographic image fixing and its formal acknowledgment in 1839.[29] The chasm between painters and a new medium like photography has been wide since the public recognition of the invention of photography. The comment of painter Paul Delaroche, reported by Gaston Tissandler in 1873, that painting has been dead since the introduction of photography is widely ascribed to him. Delaroche wasn't the only one. »This is the end of art, I am delighted I have had my day,«[30] said William Turner, a well-known British landscape painter, and the *Algemeene Kustnen Letterbode* reported »mister C« as saying that the development of photography would cause concern among Dutch artists. Indeed, new media has altered the art business, particularly in the case of commercial portraiture. For example, Aaron Scharf has pointed out that the number of miniature portraitists has declined.[31]

However, aside of the commissions of portraits, photography was so restricted at the time that it had little impact on the painting in general. It actually had to use painting approaches to hide the flaws of the still restricted medium in many cases, as errors of glass plates, exposure, sharpness or movement. There was a lot of debate in the early days of photography over whether or not such techniques should be utilized, or if the realism of the medium should be preserved even when the outcome of reality transfer was poor. Photographers Henry Peach Robinson and Oscar Gustave Rejlander, among others, shared their diverse viewpoints.[32] As photography became more refined, the employment of artistic approaches in photography was viewed as an indication of a photographer's lack of talent or an intentional attempt at kitsch.

While the early flaws of the photographic medium were concealed by retouching or photomontage, resulting in new genres, painters were inspired

28 Ruggles 1985.
29 Batchen 2004.
30 Cf. Scharf 1974, p. 102.
31 Cf. ibid.
32 Robinson 1869.

by its faults. Photographs were used to capture and chronicle scenes that would later be painted, freeing sitters in portraiture from hours or even days of posing by substituting photographic sources for models. This was particularly evident in paintings depicting motions in which posing would be difficult, such as ballerina leaps.[33] In addition to those who painted with images as a background, some painters, such as Camille Corot, Claude Monet, Gustave Courbet, Paul Gaugin, Vincent van Gogh, Henri Toulouse Lautrec, Edvard Munch, and Pablo Picasso may have been inspired by genuine photographic faults, as analyzed by Aaron Scharf and other art historians.[34] To summarize the many discussions, the arrival of the photographic media profoundly transformed painting style, including its depiction, composition, and frame.

Among the most apparent visual changes was counter-light, which was photography's technical limit. Whereas the human eye can perceive features in the shadow, the camera generates black regions with no details at low apertures and higher exposures. More specifically, while the natural eye adjusts to light when examining a surface, photographic technology is somewhat blind due to its inadaptability or set exposure dynamically. Or, the other way around, except in the case of temporary blindness, the eye does not have such a contrast capacity. Large black sections, such as those in JosephNicéphore Niépce's *Point de vue du Gras* (1826/27) began to emerge in paintings, as for example in Claude Monet's picture of the *Houses of Parliament* (1905). The dark region in both Niepce's photograph and Monet's painting belonged to the building's shadowed area.

Another feature apparent in the same comparison is halation, which is a light effect that cameras produce on film or sensor and appears as a thin line around the object surrounded by light. In the counter light, this bright line marks a division between the object and light and appears as though the dark object is glowing. Finally, another element of Monet's paintings that Louis Leroy noted is that of tongue licking, reported by Scharf.[35] This appearance is reminiscent of early photography's granularity.

Photographic technology has an impact on formal choices in visual culture, such as attention on detail or view angle, in addition to angle of light fall. This is particularly evident in the paintings of Edgar Degas, who made

33 Scharf 1962.
34 Scharf 1974; Hagen 1996; Tucker 1982.
35 Cf. Scharf 1974, p. 170–172.

extensive use of photographic technology in his photographic studies.[36] In his paintings of ballerinas, Degas used motion freeze by pre-recording them in photographs. He also painted them from the perspective of a bird. This necessitated the development of new photography viewpoints, notably from an aerial perspective.

Painters used overlaid motion as well, and it is frequently linked to how Eadweard Muybridge's studies of human and animal motion informed the creation of dynamism in painting. Finally, and most crucially, photography altered one's perception of reality, prompting some authors, such as Gertrude Stein, to speculate that it may have impacted the emergence of abstraction.[37] To summarize, photography technology, both its flaws and improvements, may have had a direct impact on art movements such as Impressionism, Realism, Futurism, and Surrealism and it continues to impact on it further.

There were regular investigations of photographs into painting after first attempts in style transfer from one medium to another. Artists such as Andy Warhol, David Hockney, Chuck Close, and Thomas Ruff experimented with transferring images into paintings in the following decades, resulting in trends such as Pop Art, photorealism, and the use of photorealism as a critical contemporary art style. Since the 1970s, photography has been absorbing painting concepts such as theatricality, literalness, and objecthood, among others.[38] Art photographers have now found their way into the official history of art, stepping out of the documentation and own media aesthetics.

Although these styles were defined by a random and approximate link to the visual medium, they were nevertheless effective. Now, thanks to artificial neural networks, they can be precisely defined. Consequently, when compared to the impressionist style in painting, such as Claude Monet's counter light, or to Leroy's licking style, which replicate the plain limit of early photographic representation, textures of paintings created by machines appear to establish a distinctive style of digital limit. These photographs, in particular, are densely packed with low-resolution granular structure, a distinct aura created by internal photo-correction processes such as auto-contrasting and auto-color, and digital file errors. Such mis-

36 Armstrong 1988.
37 Sekula 1975.
38 Fried 2008; Salomon-Godeau 2017.

takes are unavoidable with digital photography, which can today hardly be distinguished from digital painting in terms of quality.

3 Philosophical discussion

Various authors in philosophical aesthetics and epistemology dealt with the topic of the distinction between painted and photographed representation, as I have already explained in my previous writings.[39] The themes of painting and photography especially dominated French philosophical discussions about photography, as photography was also initially registered in France.[40]

With regard to analytical theory, the most enthralling debate took place at the end of the 1980s in *Critical Inquiry* between Kendall Walton and Edwin Martin.[41] Walton effectively defined the naive realistic view of the photographic medium, employing the concept of transparency. The transparency of photography, according to Walton, is what distinguishes it from other media. His assertion was that »[t]here is one clear difference between photography and painting. A photograph is always a photograph of something which actually exists. […] Paintings needn't picture actual things«.[42] Walton's theories were widely criticized at the time, and they are now widely accepted as establishing the standard realist attitude toward the medium.[43] However, since the time of this argument, the medium has undergone significant transformations. Each of them changed the amount of realism, starting with Polaroids to digital photographs. And the change is ongoing. Today artificial neural networks, which have no direct connection to physical reality disrupt photography's key realist appearance the most recently. As a result, painting and photography are no longer distinguishable from one another, as they had been for centuries.

Nonetheless, rare studies in alternative photographic techniques already demonstrated that even the indexical medium of photography, does not ensure realism. Photographs may have been edited using a variety of techniques, including multiple exposures, retouching, and photomontages.

39 Peraica 2010.
40 Taminiaux 2009.
41 Questions within the debate were successfully brought a year earlier by Brook 1983.
42 Walton 1984, p. 250.
43 Martin 1986; Currie 1991.

Although they have been used since the dawn of painting, such practices have become more prevalent in digital photography, in which the material of digital photography and digital painting is reduced to the same — a pixel. So, Christiane Paul notes that »the multiple possibilities for constructing a digital image by combining qualities inherent to or associated with different art forms frequently erode the boundaries between diverse media, such as painting and photography«.[44]

4 Painted photographs and photographed paintings

The standing of photography has altered dramatically as a result of the advent of digital photography. There have been numerous changed conditions captured by various theories, such as Geoffroy Batchen's theory of uncertain condition, Timothy Druckey's thematization of change in document status, Fred Ritchin's concept of undermined truth claim, Wills' disappearance of medium's specificity, William Mitchell's radical displacement, Stirson's claim of naturalized myths, and Roberts' claim of loss in indexical power, amongst many others. An entirely new image, characterized by many writers as computational, hybrid, embodied, algorithmic, networked, and relational, among other things, prompted Andrew Dewdney to advocate, in his book *Forget Photography*, that photography should be abandoned as a distinct medium entirely.[45] Indeed, photographic images today are combined with other photographic images, with paintings, with algorithms, and with filters to create new and different images. For the reason of their impurity, Yanai Toister refers to postdigital photographs as »paraphotographic« images.[46]

Images created by artificial neural networks are also paraphotographic. Yet because they are frequently more arranged around textures and patterns, they are more reminiscent of paintings. They also resemble errors imported from photography into painting at the very beginning of history of transition between two media; black textures such as those found in Monet paintings continue to occur in Belamy portraits created by artificial

44 Paul 2015, p. 79.
45 Dewdney 2021.
46 Toister 2020.

neural network, but for an entirely different cause. Likewise, the halation and distinct »tongue licking« like those observed by Leroy apply.[47]

5 Conclusion

Therefore, a question can be posed if the purity of photography as a completely different media, however, is exaggerated. Artificial neural networks, which frequently compute photographic reproductions of paintings as if they were painted originals, but also photographs covered in paint from the late nineteenth and early twentieth centuries, as well as the continuous history of photomontage and retouching techniques as legitimate methods, demonstrate that crossings have existed since the dawn of time. This history is evident not only in the early usage of photomontage, but also in the early fusion of two media, most notably among artists. Their effects have only recently become more evident.

In terms of early debate, artificial neural networks have absolved photography of its representational obligation. Thus, as the photographic medium abandons its indexical commitment to point to reality, it absorbs qualities of painting that are essentially the inverse of those absorbed by photography. Without depicting any physical reality or freezing frames, without manipulating or cropping reality, new images are a genuine photographic product of the second order.

At the same time, they reveal a few actual faults associated with the early transition between photography and painting; unusual crops and pointillism, for example, which evolved into a peculiar painterly style. As it was the case at the dawn of painting when paintings surpassed realism, although this was also a mistake of the photographic medium, it is now images and photographic reproductions that are employed to emulate paintings. These transfers continue to undercut any assumption of the medium's purity, while also highlighting the stage of development of each media on which they reflect and mirror. Yet, whereas in the nineteenth and early twentieth centuries, painting reflected photographic faults, computer generated images based on photographic data are today redefining photography as a medium. For that reason, the distinction between two media seems to be not lost but proven as a history of interchanges.

47 Cf. Scharf 1974, p. 170–172.

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