“Deepfakes” and the End of the Photographic Age

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A recent innovation in artificial intelligence, known as Generative Adversarial Networks (GANs), has enabled computers to generate images that are visually indistinguishable from photographs. GAN images, sometimes called “deepfakes”[1], have already been recognized to pose an epistemic threat to society by undermining the capacity of photographs to provide evidence. In this paper, I will investigate both the epistemic status and the potential aesthetic value of GAN images, as well as how the proliferation of GAN images will affect the epistemic and aesthetic value of true photographs. I will affirm the view that GAN images are a potential epistemic threat, but also argue that they are nevertheless a medium with significant potential for artistic expression. To do so, I will draw upon Dawn Wilson’s argument that photographs are ontologically dual and can be considered as both mind-independent “photo-images” and mind-dependent “photo-pictures”. I will extend that argument to GAN images to show that, while they are indeed the outputs of mind-independent computer algorithms that do not provide information about real objects in the world, they can also be skilfully generated in a way that can embody artistic intentions. Consequently, I will argue that if GAN images and photographs become indistinguishable, then photographs will come to occupy a role in society similar to that of paintings today, in that they will lose their epistemic authority but continue to be valued aesthetically.

1 Introduction

The goal of this paper is to investigate the philosophical implications of Generative Adversarial Networks (GANs), an innovation in artificial intelligence that enables computers to generate images that are visually indistinguishable from photographs. GAN images are known as “deepfakes” in the popular press, which has already recognized them to have immense social and political implications. However, little has been said with regards to their potential aesthetic value, or their potential impact on the aesthetic status of true photographs. I will aim to answer two questions. First, what are the epistemic and aesthetic statuses of GAN images? Second, how will the epistemic and aesthetic statuses of true photographs change if they become fully indistinguishable from GAN images?

In Section 2, I will analyse the contemporary debate around the epistemic and aesthetic value of photographs to provide a basis for similar arguments regarding GAN images. In that section, I will introduce two sceptical arguments that discount the aesthetic value of photographs and introduce Wilson’s ontology of photographs to reject those sceptical arguments. In Section 3, I provide a substantive account of the GAN image process

[1]The term “deepfake” is often to refer to images (or videos) of people created for deceptive or salacious purposes. In this paper I will use the term ‘GAN image’ to refer more broadly to all photorealistic images generated by GANs, regardless of their purpose or content.

in order to ground an epistemic and aesthetic analysis in the following two sections. In Section 4, I will argue that GAN images indeed pose a threat to the epistemic value of photographs. In Section 5, I will attempt to adapt the sceptical arguments introduced in Section 2 to target GAN images and utilize a modified form of Wilson's arguments to demonstrate that GAN images have a potential for artistic expression on par to that of photographs. I conclude in Section 6 that the impending shift in the role of photography due to the proliferation of GANs is not unprecedented, as it will likely be similar to the effect that the invention of photography itself had upon the previously dominant artform of painting.

2 The Duality of Photographs

Photographs are commonly thought to occupy a dual role in society. As epistemic tools, photographs have an unparalleled ability to reliably record what some objects in the world looked like at some time. Simultaneously, photography is one of the most widely used aesthetic media in the world. Photographs often fulfil either of these two roles: this is evident through a glance at the average smartphone camera roll, which might contain pictures of important documents (epistemic tool) as well as colourful sunsets (artistic expression). Crucially, some photographs fulfil *both* roles. For instance, a portrait of a former pet may be valued not only for its ability to serve as a reminder of how the pet once looked, but also for its aesthetic properties.

However, examining the assumptions that underlie this common view illuminates a potential tension between these two roles. Photographs are usually considered to be epistemically valuable because they are "mind-independent": the appearance of a photograph is causally determined by the state of the physical world, independent of any agent's intentions. On this view, photographs are more valuable epistemic tools than paintings or drawings, which are produced through the intentions of an artist. On the other hand, if we accept the widespread[2] claim that art must be intentionally produced (for instance, as formulated by Nick Zangwill[3]), the possibility that photography can be art implies that photographs must possess some degree of "mind-dependence". The dual epistemic and aesthetic roles of photography appear to pose the contradiction that photographs simultaneously possess mind-independence and mind-dependence.

2.1 Arguments Against Photographic Duality

Some philosophers, such as Roger Scruton, sidestep this apparent contradiction by simply denying that photographs have a dual nature. Given that the causal dependence of photographs on certain physical features of the world is easily observable, it seems much plausible to dispense with mind-dependence and claim that photographs are solely mind-independent. This singular thesis of mind-independence can be utilized in multiple dis-

[2]Paisley Livingston, *Art and Intention: A Philosophical Study* (Oxford: Oxford University Press, 2005), 35–40.
[3]Nick Zangwill, "The Creative Theory of Art," *American Philosophical Quarterly*, no. 32 (1995): 307–23.

tinct sceptical arguments purporting to show the impossibility of aesthetic expression in photographs.

One such sceptical argument posits that photographs too closely resemble reality to deserve any aesthetic interest for their own sake. On this view, which I call "transparency scepticism", photographs are, by nature, transparent depictions of reality and deserve no aesthetic interest in themselves. The transparent relationship between photographs and what they depict thus simultaneously justifies photography's epistemic value and dooms its aesthetic value. The most provocative such argument comes from Roger Scruton, who controversially claims that "with an ideal photograph it is neither necessary nor even possible that the photographer's intention should enter as a serious factor in determining how the picture is seen".[4] According to Scruton, the ideal photograph is "recognized at once for what it is — not as an *interpretation* of reality but as a *presentation* of how something looked".[5] Scruton's ideal photograph is the epitome of an epistemic tool, as it enables one to obtain reliable information about the appearance of an object. However, because the nature of the ideal photograph is to faithfully reproduce reality, there is no need to consider the intentions of the photographer. On Scruton's transparency sceptic view, ideal photographs are entirely mind-independent and are merely "a means to the end of seeing its subject".[6]

A second argument, which I call "mechanical scepticism", posits that the creation of a photograph is dominated by mechanical and non-human processes that interfere with the transmission of a human intention. Mechanical scepticism dates as far back as 1865 in a highly dogmatic form claiming that photography lacks "something beyond mere mechanism" and cannot be "the expression of man's delight in God's work".[7] More recently, it has been utilized in a less extreme form by Nigel Warburton, who argues that photographers must personally certify that their photographs actually fulfil their artistic intentions in order to guarantee their aesthetic value. Warburton broadly defines the process of certification as a "conferral of status" and argues that means of certification include "signing, stamping, exhibiting, [or] printing the image in a certain context"[8]. According to Warburton, such certification is the only way "in which photographers overcome the expressive limitations of a process that is largely automated",[9] and photographs lacking certification "can never be reliable indicators of a photographer's intentions".[10] Warburton's mechanical scepticism characterizes photography as a medium whose potential artistic value is undermined by the fact that it contains mind-independent automatic processes, and Warburton argues that this issue can only be mitigated through an additional mind-dependent mark.

Transparency scepticism and mechanical scepticism proceed from the same assumption about the photographic process: the claim that photographs are created through a mechanical, mind-independent process. However, they differ crucially in that the former targets the *content* of a photograph, and that the latter targets the *causal* history of

[4]Roger Scruton, "Photography and Representation," *Critical Inquiry* 7, no. 3 (1981): 588.
[5]Scruton, "Photography and Representation", 588. Italics mine.
[6]Scruton, "Photography and Representation," 590.
[7]7 "Art and Photography," *The New Path* 2, no. 12 (1865): 198–199.
[8]Nigel Warburton, "Authentic Photographs," *The British Journal of Aesthetics* 37, no. 2 (1997): 134.
[9]Warburton, "Authentic Photographs," 135.
[10]Warburton, "Authentic Photographs," 135.

a photograph. A sufficient rebuttal of the idea that photographs are intrinsically mind-independent would weaken both transparency and mechanical scepticism, as well as other views that deny the ability of photographs to earn our aesthetic interest.

2.2 Photo-Image and Photo-Picture

Dawn Wilson (publishing as Phillips) poses a solution to the apparent contradiction by proposing that photographs have a dual ontology and exist as both "photo-image" and "photo-picture". According to Wilson, the photo-image refers to the visual appearance of a photograph, and "visual properties of the photo-image supervene on… those properties caused by the photographic event [and] material production process".[11] The photo-image is the photograph considered in a purely material sense: its properties are causally determined by mechanical, mind-independent objects and processes. By contrast, a photo-picture "has intentional content as [a product] of human design",[12] and the "properties of the photo-picture also supervene on the intentions of the artist".[13] According to Wilson, skilful manipulation of the photographic process allows a photographer to create a photograph that fulfils the purpose of a photo-picture. Wilson writes:

> The skilled photographer can form intentions to create a visual image that will have particular properties. The photographer is not simply at the mercy of the photographic process; but instead uses photographed objects, along with the camera apparatus, in accordance with a skilled understanding of the photographic process, to create photo-images that have those particular visual properties. In this way a photograph can fulfil the intentions of a photographer as much as a painting can fulfil the intentions of a painter.[14]

Wilson's characterization of skilful photography poses an effective rebuttal to both transparency and mechanical scepticisms. In the case of transparency scepticism, Wilson concedes that "when we take an interest in a *photo-image*, we may be concerned with [the photographed] objects".[15] This allows that Scruton's argument to be correct only if we consider the photograph *qua* photo-image. Yet by viewing the process of producing a photograph *qua* photo-picture, i.e., through the lens of a skilled photographer's intentional actions surrounding the actual photographic event, Wilson brings to light that an artist's intention, far from being invisible in the causal history of a photograph, in fact leaves an indelible mark upon it. All this is to suggest that there is in fact capacity for an artist's intention, and therefore aesthetic value, in a photograph.

Meanwhile, in the case of mechanical scepticism, Wilson's appreciation of photographers' skilful manipulation of the photographic process suggests that the sophisticated mechanical processes involved in photography simply make available a greater set

[11] Dawn M. Phillips, "Fixing the Image: Rethinking the 'Mind-Independence' of Photographs," *Postgraduate Journal of Aesthetics* 6, no. 2 (2009): 13.
[12] Phillips, "Fixing the Image," 5.
[13] Phillips, "Fixing the Image," 20.
[14] Phillips, "Fixing the Image," 18.
[15] Phillips, "Fixing the Image," 19. Italics mine.

of tools with which photographers can realize their intentions. Historically, technological advances have broadened the expressive range of photographs. For instance, prior to the invention of colour photography, photographers had only light and dark to establish contrast in a photograph, but today they can also utilize warm and cool colours to effect further contrast. By understanding the photographic process as a means to the end of an artist, Wilson dismisses Warburton's concern that automatism limits creative expression. On the contrary, mechanical sophistication only empowers an artist's expression.

Wilson's description of the photographic process is particularly compelling because it permits photography to fulfil both epistemic and aesthetic roles without compromise. Instead of defining mind-independence and mind-dependence as directly opposed, Wilson conceives of the mind-independence of a photo-image and the mind-dependence of a photo-picture as independent traits. I believe that Wilson's account of photography satisfactorily justifies the dual roles of photography, and that it is useful for analysing photographs in terms of their epistemic and aesthetic value. To determine how Wilson's argument relates to GAN images, we must now investigate the process by which GAN images are created.

3 The GAN Image Process

In this section, I will briefly describe the process by which a GAN is used to generate an image. While the GAN image process involves a great deal of algorithmic computation, it also requires a significant amount of human operation that centres on three factors. The first is the selection of the "training set", a database of images which the GAN learns to imitate. The second is the choice of a "seed number", which the GAN mathematically transforms into an image resembling one from the training set. The third is the final step of curating images produced by the GAN.

A GAN consists of a competing pair of algorithms, a "generator" and a "discriminator". The generator is tasked with turning random numbers called "seeds" into images that resemble those from the training set. The discriminator then receives a mix of images created by the generator and images from the training set and attempts to determine the origin of each image. Both algorithms receive the discriminator's results and use them to improve through trial and error: the generator learns to operate more closely to when it succeeded in deceiving the discriminator, while the discriminator learns from its mistakes. Over time, the generator learns to turn any seed number into an image that the discriminator would guess is part of the training set.[16]

Notably, if the training set depicts one kind of object, then the GAN will produce images that appear to depict the same kind of object. For instance, a GAN trained with photographs of human faces will generate images resembling human faces. As proof of the photorealism of GAN images, consider the two faces in figure 1 and attempt to determine which was computer-generated.

[16] "Overview of GAN Structure |Generative Adversarial Networks," Google Developers, accessed Jan 4, 2020, developers.google.com/machine-learning/gan/gan_structure.

Figure 1: One face was generated by the GAN powering thispersondoesnotexist.com[17]

After training, the generator can be provided an arbitrary seed number to convert into an image. Using other AI techniques, it is possible to select a seed that further influences the appearance of the output. One particularly interesting application turns linguistic descriptions into seeds that generate images matching the description. Figure 2 contains images generated from descriptions of birds by various algorithms developed from 2016 to 2018 (lower rows show newer results).[18] While the results of even the latest algorithms are not quite as realistic as the above faces, it is likely that the quality of these images will continue to increase in time to become equally photorealistic. These results illustrate that the seed number, which can be deliberately selected, has a strong influence upon the appearance of the generated image.

In total, the GAN image process offers three opportunities to manipulate the appearance of the final image. First, the selection of an appropriate training set circumscribes the possible appearance of all generated images. Second, the choice of a seed number allows one to influence the appearance of the image within the boundaries set by the training set. Finally, the curation of GAN-generated images allows selection of the results that best fit certain criteria, which can range from simple photorealism, to correspondence with a description, to even specific visual qualities that fulfil an artistic intention.

[18]18 Han Zhang et al., "StackGAN++: Realistic Image Synthesis with Stacked Generative Adversarial Networks," *IEEE Transactions on Pattern Analysis and Machine Intelligence* 41, no. 8 (2019): 1954, fig. 3.

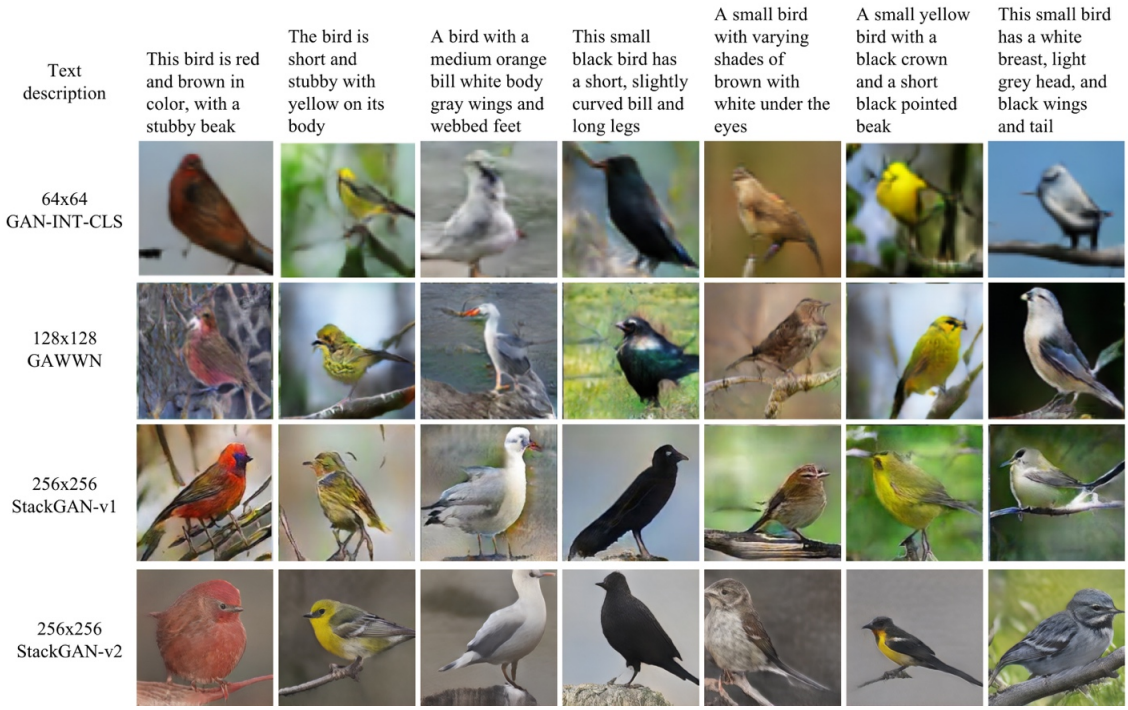

Figure 2: Results from various GANs trained to generate images of birds according to image descriptions. Reproduced from Han Zhang et al. with permission.

4 The Epistemic Value of Generated Images

4.1 Probabilistic Visual Information

As discussed in Section 2, photographs are commonly understood to be epistemically valuable in virtue of their mind-independence. Here, the term "mind-independence" refers specifically to a mind-independent counterfactual relation to the portrayed object. For instance, if a photograph is taken of a person's face, then a change in the person' facial expression necessitates a like change in the photograph — the photograph will show a smile if and only if the person is smiling. This dependence is invariant with respect to any mind, as the photograph will show a smile regardless of the mental state of the photographer or viewer. Indeed, this relation persists even if the photograph is taken by a computer-controlled security camera. However, this idea about mind-independence is merely an intuition, not a rigorous epistemic argument.

In a pair of papers,[19] [20] Cohen and Meskin analyse the process by which we purport to gain knowledge from photographs. On their account, photographs are not sources of knowledge (defined as justified true belief), but of "information", which Cohen and Me-

[19] Jonathan Cohen and Aaron Meskin, "On the Epistemic Value of Photographs," *The Journal of Aesthetics and Art Criticism* 62, no. 2, (2004): 197–210.

[20] Aaron Meskin and Jonathan Cohen, "Photographs as Evidence," in *Photography and Philosophy*, ed. Scott Walden (Malden: Blackwell 2008) 28 Jan. 2009: 70–90.

skin define as a "probabilistic, counterfactual-supporting, connection between independent variables".[21] Their definition of information is two-pronged: A carries information about B only if, firstly, A is likely to be very close in value to B (probabilistic connection), and secondly, a change in B will result in a change in A (counterfactual). Having defined information, Cohen and Meskin assert that photographs "typically provide information about many of the visually detectable properties of the objects they depict".[22] Thus, if a photograph carries information, then its appearance resembles the appearance of the object it depicts, and any change in the depictum causes a corresponding change in the photograph. Additionally, Cohen and Meskin clarify that "informational links are constituted independently of any subject's beliefs or mental states"[23], which introduces the condition of mind-independence. This claim is similar to the mind-independence thesis with which we are already familiar, but it differs significantly in that it operates with regards to *information*, not knowledge or belief.

Images generated by a computer do not necessarily have a similar mind-independent counterfactual correlation with the appearance of their depicta. While the images generated by a GAN algorithm resemble those of the training set, this resemblance does not support counterfactuals relating to specific concrete objects. For instance, the images at thispersondoesnotexist.com depict faces that vary in age, gender, skin tone, and other features, yet they do not provide information about any actual person. GAN images cannot carry information as photographs do about their depicta.

4.2 Salient Image Categories and Epistemic Value

Cohen and Meskin concede that the capacity of a medium to carry information is distinct from our *belief* that the medium actually carries information. To underscore the importance of this distinction, Cohen and Meskin propose the example of courtroom illustrations and veridical portrait paintings, which carry information about their subjects because they probabilistically and counterfactually resemble their depicta. Nevertheless, our beliefs about them differ, and "we do not accord the same epistemic status to realistic portrait paintings as we accord to photographs".[24]

To explain our *beliefs* that photographs carry information, Cohen and Meskin examine the background social practices involved when we interpret images. According to Cohen and Meskin, when we encounter a token photograph, we "typically categorize that token as an instance of the type of photographs" and deem it epistemically reliable.[25] By contrast, when we encounter even the most realistic portrait painting, we "typically do not categorize that token as an instance of the type of veridical portrait paintings" but instead "an instance of the type of portrait paintings" and deem it epistemically unreliable.[26] The difference between these examples consists in that the "type [of photographs]

[21]Cohen and Meskin, "Epistemic Value," 7.
[22]Meskin and Cohen, "Evidence," 3.
[23]Meskin and Cohen, "Evidence," 3.
[24]Cohen and Meskin, "Epistemic Value", 15.
[25]Cohen and Meskin, "Epistemic Value", 16.
[26]Cohen and Meskin, "Epistemic Value", 16.

is salient for subjects in a sense that these other types [portrait paintings] are not".[27] Most of us believe that photographs, paintings, and drawings are salient types of images — only the first of which is a reliable carrier of information — but that veridical portrait paintings and courtroom drawings are not salient types, despite the information they actually carry. Cohen and Meskin remark that "both the saliency ordering among representational types and the generally-held background beliefs about these types are, presumably contingent".[28] According to this view, if our beliefs change and the salience of photographs as a type of image diminishes, then it is possible that we would judge token photographs to fall under a salient type of image that does not reliably carry visual information and photographs would lose their epistemic value.

If GAN images become so photorealistic as to become indistinguishable from true photographs, then true photographs will cease to be a salient category of image. Just as veridical portrait paintings and non-veridical portrait paintings both fall under the salient category of portrait paintings, GAN images and digital photographs would likely both fall under the category of the "photorealistic image" as a whole. Because the unified category of photorealistic image contains both information-carrying photographs and information-devoid GAN images, the category cannot be said to reliably carry information. Although photographs would retain their ability to carry information — there could certainly be no change to the content of pre-existing photos — on the level of belief, they would be judged to be simply "digital images" with no epistemic value. Thus, the proliferation of photorealistic GAN images may entirely strip photographs of their epistemic status.

5 The Aesthetic Value of GAN Images

5.1 Aesthetic Scepticism and Technologial Advancements

Recall from Section 2 the arguments I termed transparency scepticism and mechanical scepticism. Despite their archaic roots, the two sceptical arguments might seem to be increasingly justified by historical and modern advances in photographic technology. In the case of transparency scepticism, one might claim that the argument has been strengthened by improvements in the resolution and colour fidelity of digital cameras. If the argument of transparency scepticism applies to a scratchy, blurry, black-and-white photograph that significantly distorts reality, then it most definitely applies to a 24-megapixel image from a cutting-edge digital camera.

In a similar vein, the argument of mechanical scepticism is also strengthened by technological advancements. Pressing the shutter button on an iPhone is far more "automatic" than spending twenty minutes exposing a delicate daguerreotype plate to light and curing it with noxious chemicals. A mechanical sceptic might therefore argue that the human element in photography has continuously diminished over time to a comparatively

[27] Cohen and Meskin, "Epistemic Value", 16.
[28] Cohen and Meskin, "Epistemic Value", 19.

infinitesimal amount in the present. would follow that the aesthetic value of photography has decreased in parallel.

Given that both sceptical arguments discussed are strengthened by recent developments in photography, it is possible that the arguments will also apply convincingly to GAN images, which represent yet another step forward in image technology. If these arguments do indeed successfully diminish the artistic value of GAN images, and GAN images become indistinguishable from genuine photographs, then it is possible that all digital images, genuine photographs included, will be relegated to an inferior aesthetic status.

5.2 Are GAN Images Mind-Independent?

If GAN images are entirely mind-independent, then the sceptical arguments against the aesthetic value of photography may also apply equally to GAN images. In Section 4, we showed that GAN images have a mind-independent relation to their training set and seed. However, as we have seen in Wilson's analysis of photography, this is not to say that GAN images are *entirely* mind-independent. Wilson justifies her view that a photograph *qua* photo-picture is mind-dependent by characterizing photography as a process that involves intentional decisions made by the skilled photographer throughout the photographic process.

The same can be said for GAN images. As described in Section 3, during the GAN image process the image creator makes three choices: the selection of a training set (general appearance), the choice of a seed (specific appearance), and the curation of output images. These three opportunities for deliberate manipulation of the GAN image process have analogous opportunities in the photographic process. The selection of the training set, which determines the general appearance of generated images, is similar to a photographer's selection of a scene or object to photograph. Just as the choice of a training set consisting of images of human faces will cause the final image to resemble a human face, a photographer's choice to photograph a person will cause their resulting photograph to depict a person. Next, the seed, which determines the appearance of the image within the boundaries of the training set, is analogous to a photographer's selection of a vantage point and camera settings, such as focal length, shutter speed, and exposure. While the seed for a non-intentional GAN image can be random, so too can a non-intentional photograph be taken on automatic settings from an arbitrary vantage point. But skilled photographers control these factors to influence the appearance of their final image, and I argue that creators of GAN images can do the same by selecting a seed. Finally, the curation of GAN images is identical to a photographer's curation of their best work from a session — a wedding photographer may capture a thousand photographs but only determine a few dozen to be satisfactory. If we accept Wilson's argument that the photographic process is sufficiently mind-dependent to fulfil artistic intentions, then these parallels with the GAN image process suggest the same about the latter.

5.3 Dispelling Aesthetic Scepticism Regarding GAN Images

Let us consider the arguments of transparency and mechanical scepticism to determine whether they are applicable to GAN images, and then attempt to adapt Wilson's stance to rebut them if they do. Transparency scepticism, especially in Scruton's formulation, assumes the premise that, in their "ideal form", photographs are reproductions, not interpretations, of reality. In the terminology of Section 4, photographs are meant to carry visual information. Even if we accept this essentialist view of photographs and grant that the information-carrying "ideal form" of photography precludes artistic expression, it is also clear that this argument simply does not apply to GAN images. GAN images, as shown in Section 4, do not carry visual information and do not resemble any existing object. As such, transparency scepticism falls flat against GAN images and provides no basis for denying their potential aesthetic value.

Having dispensed with transparency scepticism against GAN images, let us now turn to mechanical scepticism. The mechanical sceptic argument against photography holds that the presence of mechanistic processes in photography reduces the ability of photographs to reliably transmit the original intentions of the photographer. This argument applies GAN images with little to no modification — if anything, GAN images can be said to use even more automated processes than does photography. However, Wilson's objection to mechanical scepticism successfully defends the aesthetic value of GAN images with little to no modification as well. As a mechanical sceptic, Warburton might claim that the creator of a GAN image leaves even less of a trace upon their work than a photographer does, and that they must further compensate for that loss of agency through some personal certification. However, as inspired by Wilson's argument, so long as the GAN image process still allows an image creator to determine the content of the resulting GAN image in accordance with an artistic intention, the resulting image, qua picture, can still transmit that intention and bear artistic value. Wilson's view states in short that the various image-making processes—painting, photography, even GANs — exist to help artists realize their intentions, and that artistic intentions are fulfilled through those processes, not limited by them.

Thus, scepticism about the aesthetic value of photography is equally as inapplicable to genuine photographs as it is to GAN images. Just as photography can be mastered by a skilled photographer to produce images of a desired visual appearance that bears an artistic intention, so too can the GAN image process allow for a skilled image creator to fulfil their artistic intentions through the skilful use of that process. Wilson's characterization of photographs as a duality of photo-image and photo-picture can be applied to GAN images; it is possible for a skilled individual to create not just a GAN image, but a GAN *picture*.

GAN images and photographs are two very different kinds of images in terms of their production, but they both are deserving of aesthetic interest in their own unique manner. While other arguments that GAN images are intrinsically aesthetically inferior to other visual media may exist, I argue that the most widely held such views will rely on the same flawed thesis of mind-independence that is used to justify similar arguments

against photographs. Given that in the art world photographs are widely believed to be a full-fledged visual artform comparable to painting, I believe that, barring the emergence of totally novel objections, GAN images may soon join photographs and paintings on the walls of the art gallery.

6 Implications: The End of the Photographic Age

In 1958, film theorist André Bazin called the invention of photography "clearly the most important event in the history of the plastic arts".[29] On Bazin's account of the evolution of visual art, prior to the invention of photography "painting was torn between two ambitions: one, primarily aesthetic… the other… to duplicate the world outside". In other words, paintings once occupied the dual epistemic and aesthetic role that photography fulfils today.[30] Bazin claims that the invention of photography "freed Western painting, once and for all, from its obsession with realism".[31] According to Bazin's chronology of painting, the period between the development of perspective — the "original sin of Western painting"[32] — and the invention of photography was a dark age in which painters were torn between epistemic and aesthetic commitments. Afterwards, painters abandoned their imagined obligation to realism, ushering in in a golden age of creativity.

Just as Bazin uses the invention of photography to delineate the "dark age" and "golden age" of painting, the proliferation of GAN images presents another boundary, in this case between two ages of photography. Taking inspiration from Bazin, I propose to call the period of time in which photographs occupied their dual epistemic-aesthetic role in society the "Photographic Age". The Photographic Age began with the invention of photography, and, as I have argued in this paper, it may end with the invention of the GAN image.

As we stand in the last days of the Photographic Age, there remain two practical problems to solve, each corresponding to one of the aspects of photography. First, the loss of photography as a ubiquitous and trusted epistemic tool indeed poses a threat to be mitigated, whether through an effort to prevent the perceptual merging of the categories of photographs and GAN images, or through an attempt to inform the public about the impending crisis of epistemic unreliability. Second, for the sake of artistic innovation, we ought to maintain permissive definitions of aesthetic value such that the GAN image process and photography can both be used to their full potential, rather than adopt dogmatic and exclusionary definitions of art that stymie the creation of new works. Photography has long been a special source of information and a cherished artistic medium, but our best hope for its future in the face of technological advances is to enjoy the new artistic possibilities created by artificial intelligence while avoiding the threats that it poses.

[29] Andre Bazin and Hugh Gray, "The Ontology of the Photographic Image," *Film Quarterly* 13, no. 4 (1960): 9.
[30] Bazin and Grey, "Ontology", 9.
[31] Bazin and Grey, "Ontology", 6.
[32] Bazin and Grey, "Ontology", 7.

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