

# Stories Stay, Lessons Leave: Principles on AI Art from Photography

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## Abstract

The recent popularity of Artificial Intelligence (AI) within the arts is a phenomenon that maps a continuation of the historical advances in technology. From the insurgence of calligraphy with the introduction of the letterpress, to the photographs shared space in painting, technology has entered the arts with its most recent immersion via AI. In this work, we acknowledge that AI carries affordances to art that is not present in other medium but equally raise questions on what defines its aesthetics as a notion of art. As such, we draw parallels from conceptual photography's historical past to synthesize principles of interaction, along with instantiated examples, to carry AI Art toward an aesthetic discipline.

## Introduction

Art, according to contemporary definitions and schools of thought, can be defined in a traditional, aesthetic, or institutional practice. In our focus on aesthetic principles, we highlight artworks derived through conceptual experience that fall into question when AI is integrated as a medium (Manovich and Arielli 2023) - for which we define AI Art. As such, we query how framing the discussion on the integration of AI as a medium can open creative affordances that would not be available otherwise.

Much often, questions on AI Art fall under a critique of the medium, such as its utility for regurgitating data in interesting ways, which in some cases has led to hesitations to even attribute art that is created with AI (Mikalonytė and Kneer 2022). Yet, this phenomenon is not novel, as warranting a closer look into art history, finds that photography was equally criticized, in its case, for mechanically plastering reflections of reality that do not compare to the labor of a painter.

During photography's contested incline in the 20<sup>th</sup> century, seminal notable photographers shared their say on the medium. Edward Weston claimed photography had "opened blinds to a new world vision" whereas Paul Strand was indifferent to the question of whether photography is an art (Sontag 2001, p. 96). However, the conceptual notion of photographic style in the following decades carried a desire to let the medium be without comparison to its compatriot arts, at least for those who subjected themselves to its use.

Soon enough, with movements such as Pictorialism (Sternberger 2001), photography was uncontested within the arts, and although this could be a factor of time, this phenomenon equally emerged through shifts of interaction that opened modes of aesthetics that were not available before.

## Approach

Taking lessons from photography without rehearsing history, we find that framing AI Art towards its own stronghold can unveil aesthetic affordances that are easily adaptable. To begin by opening contemporary doors, it can be understood that "computers do not create art, people using computers create art" (Hertzmänn 2018, p. 2). This allows one to view AI as a medium that is to decipher its mode of interaction.

To follow suit, with AI Art having greatly accelerated since 2014, endeavors on various fronts begin to guide its lens. These include technical illustrations (Shan et al. 2023; Zammit, Liapis, and Yannakakis 2022), synopsis on discourse (Newton and Dhole 2023; Issak and Varshney 2022), literature on the novelty of encoding artistic input as an abstract multi-dimensional space of image representations (Cetinic and She 2021, p. 9), and introductions of ethics (Divakaran, Sridhar, and Srinivasan 2023; Ventura and Gates 2018) and explainability (Bodily and Ventura 2018) as measures to guide system aesthetics in such pursuits.

However, to elucidate the mapping of AI Art in greater depth, we interweave parallels to conceptual photography through current anthology and engage in research through design (RtD) to devise our findings. In doing so, we develop three principles of interaction, namely in technique, utility, and phenomenology, coupled with examples for instantiation. Our principles are largely informed by the distinction between what is 'artistic' and 'aesthetic' from a pragmatic approach as we seek to overarchingly navigate AI Art toward an aesthetics discipline.

## Principle 1: Technique creates a discipline

One may say that photography emerged as a discipline in its ability to transform from a tool to view reality, such as the initial Daguerreotypes (Kul-Want 2010, p. 105), into a discipline of its own in unveiling an extension to view the world, such as the minuscule details of everyday visuals. That is, by establishing a method that does not compare to its counterparts, such as capturing the fleeting moments of the human

eye, be it the speed of a horse or the momentary sighting of a beautiful sunset.

Yet this does not suffice to deduce its triumph. A camera that simply allows one to press a button is different from one that takes the artist through the journey of the artwork. That was the objection raised by painters as they challenged the Daguerrotype’s instantaneous mimicry of reality without the inherent experience in mind. Certainly, photography had its own process that undertook the artist through a journey. The preparation of the camera was an act of its own but, as elucidated in Walter Benjamin’s 1931 essay “A Small History of Photography” (Kul-Want 2010, p. 110), the technique is what ultimately gave rise to its uncontested foothold.

Photographers may speak about their process of tuning on exposure times similar to how a painter may describe selecting different brushes, and a photographer’s eye may now be tailored differently to capture what other disciplines would not. These factors lend questions that are specific for the discipline to decipher. In fact, when photography even began to emerge on its own, artists began to extract the tool from the process. Some examples of such extraction include the cyanotype method developed by Anna Atkins in 1842 to print a white negative on a blue (cyan) colored background (Lotzof 2018), the “printing out” method of 1891 for printing images without a darkroom, and photograms to recite “photography without a camera” as coined by Laszlo Moholy-Nagy in the early 20th century (Moholy-Nagy and Molderings 2010).

These examples recognize the importance of technique that may even supersede the tool as they resulted in “photography” as a discipline that is not based on the camera that was used to capture images, i.e. the medium that led to its contested beginning in the first place. It has established through its technique a world view that is now observed and carried out upon various mediums. With this realization, we translate one possibility in which AI Art may also open a worldview through its intrinsic abilities.

### Examples of AI Art Technique

In this context, we employ AI’s mechanism to view nuances of the everyday imaginations of our world. We highlight “imagination” as what we observe not what is visible to the eye, but rather what is invisible. In tangential efforts, these have been used for idea generation within the creative process (Smith et al. 2023), however, we frame our inquiry on the intangible ideation.

#### Title: Electrical Activity in Fungi

In the following implementation, we query the presence of electrical activity in Fungi, a line of research that has been explored for the possibility of fungal electric transmission. We base our prompts on the limitations to this query - the difficulty detecting the variable analysis of neural activity in Fungi (Dehshibi and Adamatzky 2021). We utilize Stable Diffusion, a high-resolution image-synthesis model, (Rombach et al. 2022) to illuminate our ideation in two detailed formats, which we arrive at upon prompting various iterations that signaled the posited inquiry.

In the nascent image the idea behind the prompt paints, what differentiates this seed from a photograph, is that it

is not capturing the nuanced physical elements of fungi, but rather presents the idea as an amalgamation of what has been learned about this process. In fact, although this may fall under the fallacy to represent an actuality, which can be excused as a seedling of imagination, it is not a microscope or pure imagination, but somewhere in between. In doing so, Fig 1a displays what the “imagined data” looks like, whereas Fig 1b dives deeper into the space of possible imagery.



(a) Prompt 1: An intricate sci-fi VR 3D painting of electrical activity in Fungi showing the spiking activity of the mycelium networks with movement about mechanisms. (b) Prompt 2: An intricate sci-fi VR 3D painting of electrical activity in Fungi showing the spiking activity of the mycelium networks **detecting** the activity about mechanisms.

Figure 1: Electrical Activity in Fungi: External and Internal

### Principle 2: Transition from tool to instrument

In a pragmatic approach, John Dewey, in his book, *Art as Experience*, cites the distinction between the artistic and esthetic (Dewey 2005). In Chapter III, Having an Experience, Dewey elucidates the difference between what is ‘artistic’ (act of production) and ‘esthetic’ (perception and enjoyment), in that no experience of any sort is in unity unless it has esthetic quality, which occurs in the alternating relationship of doing and undergoing, and is joined by perception. This is a notion in art that entails esthetic experience as inherently connected with the experience of making.

To Dewey’s point, ‘aesthetics’ (experience) is the judgment and ‘artistic’ (art) is the expression, and interpreting this definition finds place in transitioning interaction from a tool to an instrument. The instrument creates awareness through the experience, where the experience of knowing what has been done and felt, as a form of judgment allows the artist to proceed with the extraction and beyond the instrument as a method of doing so. The artifact is not for disposal or utility but part of the process and in the flow of an experience. There does not exist a distinction between doing and undergoing.

We decipher this integration to not be new but in the likes of other contemporary scholars mention, such as the question of physicality in creativity (Moruzzi 2022) and in transitional terms to Memo Atken’s analogy of a “real-time interaction analogous to playing a musical instrument” (Atken, Fiebrink, and Grierson 2019). In fact, extending this

analogy, extracting the notion that music now exists, through undergoing, one can decipher an experience such as music without instruments - hearing the sounds of one's surroundings and finding the patterns that arise, to speak of variations (Hui 2021).

Likewise in an analogy cemented in our study, this entails extending AI from a tool to a canvas. For instance, instantiating, FRIDA, a collaborator robotic arm painter that was set to enhance the creativity of the human painter (Schaldenbrand, McCann, and Oh 2022), we find its function for the artistic process does not lend execution to be a conclusion. Circling to Dewey, a technique that can even be better executed by a machine is not "esthetic" and comprehensive to art, yet, in fact, mechanical (Dewey 2005). Hence, if interactions were to embody the esthetic, we must imagine the canvas, as opposed to the tool, and embrace going and undergoing as an embodied experience. In our analogy, the canvas is not the recipient of the robotic arm (tool) but the experience, and beyond the literal analogy, the canvas is the instrument.

## Examples of AI Art Instrument

### Title: Interpolating Experiences

In the working definition of a tool to assist with ideation and an instrument to aid with expression, we aim to encompass the notion presented above by exemplifying an instantiation of what may emerge if this principle were to be solidified. Hence, we utilize AutoDraw (Motzenbecker and Phillips 2017), an interactive tool that turns sketches into images, to emulate a canvas that mirrors an instrument. We carry henceforth with a wave sketch that is rendered in collaborative completion.

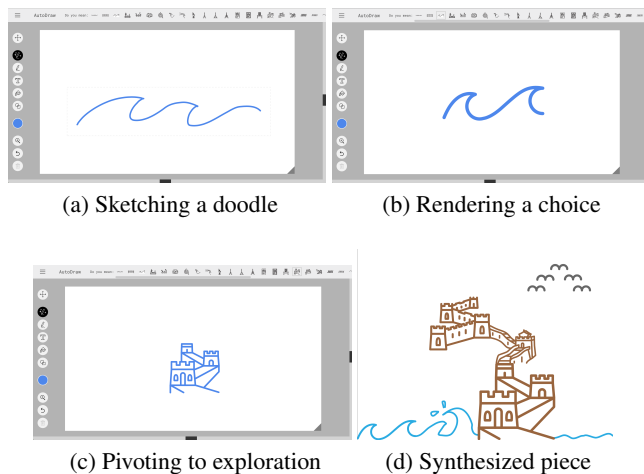


Figure 2: Interpolating Experiences with AutoDraw

To elucidate our conceptual mapping in Fig 2 above, we begin with a wave on an empty canvas as Fig 2a. Following suit, we render the sketch into the options on the top panel of Fig 2b to choose what we intended to draw. We then reiterate the sketch by choosing different meant drawings from the

canvas resulting in Fig 2c. Upon diversion and uniformity to intent, colors, and composition, such as sketches that are not turned into meant drawings to present ideas that remain as they are (the splashing of waves to the castle on the left-hand side in Fig 2d), we arrive at our synthesized piece as a conglomeration of the various sketch experiments. Our piece, being enabled by integrated generation, is drawn on the model and lends a progression to AI as a canvas.

## Principle 3: Phenomenology of AI

Some scholars have already established instrument-like interaction to occur within a phenomenon known as Embodied Interaction, nearing Principle 2, which as elucidated by Paul Dourish in HCI literature, is the creation, manipulation, and sharing of meaning through engaged interaction with artifacts (Dourish 2001, p. 126). At the core, taking away that experience is what leads to the distinction that one may be artistic and not esthetic, and even to the point that art without esthetic takes away the core ability to utilize experience as judgment and art as expression.

Without judgment that is interwoven with the experience - be it serendipitous or meticulous - the question now becomes how experience may be incorporated within interaction. An experience has pattern and structure, but it is not just doing and undergoing in alteration but consists of them in a relationship. In art, it also incurs an element of freedom in flow (Dewey 2005). However, we acknowledge that this is a far side argument to the notion that 'esthetic' interactions are infinitely intertwined to inherently allow one to form from their experience as judgment. Hence, we further this notion on a comprehensive metric through the phenomenology of Human-Computer Interaction (HCI).

Under the umbrella of experience, a similar alteration is presented to understand interactivity and traces back to the notion of phenomenology. In the steps to a phenomenology of Human-Computer Interaction (HCI) outlined by Daag Svanaes, phenomenology is having an experience that is largely associated with the integration of an outside medium (Svanaes 2000). This alignment opens room for the acknowledgment of such interaction, where it can be extended as not solely an outcome of the experience. That is, embodiment although able, is not comprehensive to its intertwined nature, whereas interaction cites greater avenues, especially for a nascent establishment, to proceed in methods of garnering experience.

Extending these notions to AI Art, we find the novel aspect of the phenomenology in AI to be its evolution as a medium that encompasses an umbrella of interactions. For instance, as an amalgamation of data, one can curate a dataset and train a model based on the "image" that is fed to its query (Akten 2021), whereas on the other hand, by citing what has already been learned by large models and probing their mechanisms, one can engage in multi-modal interactions such as Prompt Programming to engineer thought mechanisms and express their intent through writing. In these methods lie differences in modality, output, and process that differentiate each interaction, which to its formalization, lends each method to exhibit its own form of experience that establishes its underpinning.



## Examples of AI Art Phenomenology

To elicit various experiences, we draw inspiration from shadows as a photographic phenomenon. We choose this medium primarily as images turn reality into a shadow, a memory of what was (Kul-Want 2010, p. 203) and in retrospect, in light of photographic print. In traditional film, photographs were produced by reversing light in the dark-room to cast a shadow onto the photo paper whereby, in this process, every photograph is of a shadow. Shadows also rid bias in the curation of experiences as direct observations.

### Title: What AI Art can learn “with” Photography

For this piece, we begin by seeding the experience of photography. Thus, we set out on a quest to capture shadows and embed ourselves in the act of walking around the city in sight of shadows. The session occurred over a 3-mile walk over the course of 4 hours that resulted in a total of 64 shots on a Canon t5i camera. Notable photographs with the associated experiences are presented below:

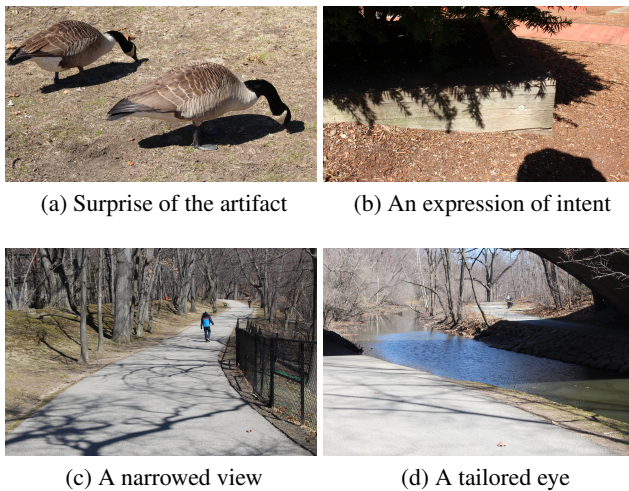


Figure 3: Photographic Experiences

To proceed with our process, we then prompted all photographic experiences (Figure 3) in accordance with AI as a “lensless” camera. To build the storyline of our metaphor, we developed our prompt by binding elements that captured metaphorical interest. Devising the prompt as such also takes into account the Meta-Prompt NLP technique that enables the prompt to better inform the model of the experience (Reynolds and McDonell 2021).

Our prompt began with the conditions of a camera. These include location, angles, time of day, subjects, lens type, and aperture. We then utilized vocabulary that recognized the experience as a phenomenological encounter from Minor White, a 20th-century photographer known for his conceptual photographs (Hall and Hoffman 1978). We devise the configurations of our seed seen below:

**Seed:** 55mm lens at f5.6 taken as an intimate act of contemplative witnessing and co-creation between photographer and subject in a recorded dialogue of light at a given

space in time.

To follow suit, we embed each prompt with the learned representation that is inherently symbolic (description of the image) and generate an image with each prompt via Stable Diffusion’s Realistic Vision V1.3 model (to emphasize the photographic aesthetic). We present the prompts and corresponding figures as follows:

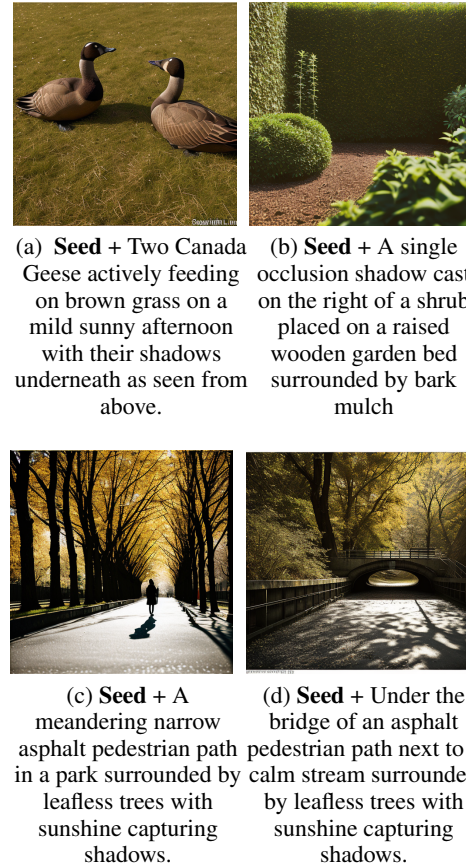


Figure 4: Lensless Experiences with associated prompts

## Conclusion

In history and trace, photography and AI are drawn together as representations of the objects they capture and depict. In furthering AI Art with photography as its historical predecessor, we recognize and distinguish photographic experiences as carriers of aesthetic representation. We find that this mapping exposes some of the creative affordances of AI Art that might not be available otherwise and do so with principles of interaction to elucidate implementations of such exhibitions. Further implications can also be drawn in extending this viewpoint towards other AI art areas, such as those trained on a corpus of images as the sole artistic input. In our study, we find this approach to be data agnostic, as feeding a “photograph” would not encompass semantic trace, yet leave this as a possibility for inquiry within the instantiated principles and those foregrounded beyond.



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## References

- Akten, M.; Fiebrink, R.; and Grierson, M. 2019. Learning to see: you are what you see. In *ACM SIGGRAPH 2019 Art Gallery*, SIGGRAPH '19, 1–6. New York, NY, USA: Association for Computing Machinery.
- Akten, M. 2021. *Deep Visual Instruments: Realtime Continuous, Meaningful Human Control over Deep Neural Networks for Creative Expression*. doctoral, Goldsmiths, University of London.
- Bodily, P. M., and Ventura, D. 2018. Explainability: An Aesthetic for Aesthetics in Computational Creative Systems. *Proceedings of the 9th International Conference on Computational Creativity, Salamanca, Spain, June 25 – June 29*.
- Cetinic, E., and She, J. 2021. Understanding and creating art with ai: Review and outlook.
- Dehshibi, M. M., and Adamatzky, A. 2021. Electrical activity of fungi: Spikes detection and complexity analysis. *Biosystems* 203:104373.
- Dewey, J. 2005. *Art as Experience*. New York, New York: TarcherPerigee, 1st edition edition.
- Divakaran, A.; Sridhar, A.; and Srinivasan, R. 2023. Broadening ai ethics narratives: An indic art view.
- Dourish, P. 2001. *Where the Action Is: The Foundations of Embodied Interaction*. MIT Press.
- Hall, J. B., and Hoffman, M. E. 1978. *Minor White: Rites & Passages*.
- Hertzmann, A. 2018. Can computers create art?
- Hui, Y. 2021. *VARIETIES OF EXPERIENCE OF ART*. University of Minnesota Press. 20–37.
- Issak, A., and Varshney, L. R. 2022. Artistic Autonomy in AI Art. *Proceedings of the 13th International Conference on Computational Creativity, Bozen-Bolzano, Italy, June 27 - July 1, 2022*.
- Kul-Want, C., ed. 2010. *Philosophers on Art from Kant to the Postmodernists: A Critical Reader*. New York: Columbia University Press, 1st edition edition.
- Lotzof, K. 2018. Anna Atkins and the first book of photographs.
- Manovich, L., and Arielli, E. 2023. *AI Aesthetics: A Critical Guide to AI in Art, Media and Design*. manovich.net. chapter AI image and Generative Media:.
- Mikalonytė, E. S., and Kneer, M. 2022. Can Artificial Intelligence Make Art? arXiv:2104.07598 [cs].
- Moholy-Nagy, L., and Molderings, H. 2010. *László Moholy-Nagy: The Photograms: Catalogue Raisonné*. Ostfildern: Hatje Cantz, illustrated edition edition.
- Moruzzi, C. 2022. The (Artificial) Physicality of Creativity: How Embodiment Influences Perceptions of Creativity. *Proceedings of the 13th International Conference on Computational Creativity, Bozen-Bolzano, Italy, June 27 - July 1, 2022*.
- Motzenbecker, D., and Phillips, K. 2017. AutoDraw by Google Creative Lab - Experiments with Google.
- Newton, A., and Dhole, K. 2023. Is AI Art Another Industrial Revolution in the Making? arXiv:2301.05133 [cs].
- Reynolds, L., and McDonell, K. 2021. Prompt Programming for Large Language Models: Beyond the Few-Shot Paradigm. arXiv:2102.07350 [cs]. arXiv: 2102.07350.
- Rombach, R.; Blattmann, A.; Lorenz, D.; Esser, P.; and Ommer, B. 2022. High-resolution image synthesis with latent diffusion models. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*.
- Schaldenbrand, P.; McCann, J.; and Oh, J. 2022. FRIDA: A Collaborative Robot Painter with a Differentiable, Real2Sim2Real Planning Environment. arXiv:2210.00664 [cs].
- Shan, S.; Cryan, J.; Wenger, E.; Zheng, H.; Hanocka, R.; and Zhao, B. Y. 2023. Glaze: Protecting artists from style mimicry by text-to-image models.
- Smith, A.; Schroeder, H.; Epstein, Z.; Cook, M.; Colton, S.; and Lippman, A. 2023. Trash to Treasure: Using text-to-image models to inform the design of physical artefacts.
- Sontag, S. 2001. *On Photography*. New York: Picador, 1st edition edition.
- Sternberger, P. S. 2001. *Between amateur and aesthete: the legitimization of photography as art in America, 1880-1900*. Albuquerque: University of New Mexico Press, first edition edition.
- Svanæs, D. 2000. *Understanding Interactivity: Steps to a Phenomenology of Human-computer Interaction*. Norges teknisk-naturvitenskapelige universitet, Institutt for datateknikk og informasjonsvitenskap. Google-Books-ID: WyAzOAAACAAJ.
- Ventura, D., and Gates, D. 2018. Ethics as Aesthetic: A Computational Creativity Approach to Ethical Behavior. *Proceedings of the 9th International Conference on Computational Creativity, Salamanca, Spain, June 25 – June 29*.
- Zammit, M.; Liapis, A.; and Yannakakis, G. N. 2022. Seeding Diversity into AI Art. *Proceedings of the 13th International Conference on Computational Creativity, Bozen-Bolzano, Italy, June 27 - July 1, 2022*.