Artificial Intelligence Generated Art Imitation and the Art World: Implications and Further Questions

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Introduction

Leaving something represents the unanimous desire of people, whether it is a work of art, a composition that stirs emotion within the listener, or maybe just the name carved into tree bark. In the case of artists such as Pablo Picasso, there remain a considerable number of artworks, from various areas of art, capturing all the changes through which his art evolved. In addition to an impressive legacy, these artworks represent data and patterns that can be learned by a machine learning program. This paper aims to use the current capabilities of artificial intelligence to generate some text prompts and then transform them into artworks inspired by Pablo Picasso, subsequently identifying common elements in Picasso's original work. In a 2002 article, long before the emergence of programs like Midjourney and Dall-E 2, Harold Cohen talks about his program called AARON, created to generate art in real-time. He addresses issues related to creativity in the context of generated art.

In Cohen's view, creativity involves a constant change in artistic expression, giving the example of Mozart and Matisse, who had a consistent style throughout their lives but still saw modifications such as the addition of new elements in their artworks (Cohen, 2002: 59). The fundamental way in which the AARON program is different from contemporary programs that generate art is that Cohen did not use his program to generate art that imitates the style of other painters, but rather trained his program after his style, consisting of an artist-program collaboration that lasted approximately 40 years (Garcia, 2019). Certainly, current models also allow for training on one's

artworks, but their imitative capacity should not be ignored and is therefore a worthy subject of investigation.

Artificial Intelligence, art, and the human mind

The realm of art and creativity has long been viewed as the exclusive domain of humanity, with the works of great masters and their innovative techniques serving as a testament to the unique capabilities of the human mind. From awe-inspiring frescos to the controversial «Fountain» the expression of creativity has driven the evolution of art and spurred transformative cultural shifts. It is significant to consider that the decision to create an installation using a urinal, as demonstrated by Marcel Duchamp, arose from a moment of heuristics. As described by Niklas Hageback and Hedblom (2021), a heuristic moment is a moment that initially appears nonsensical, but ultimately leads to a shift in paradigms.

Niklas Hagebaback and Hedblom (2021) argue that, as AI continues to develop and become more widely available, it will inevitably have a significant impact on the world of art. This impact may take the form of changes to the creative process and the production of artworks, as well as a broader shift in how we understand and perceive art and its role in human culture. While AI can generate vast numbers of variations on existing artworks or create entirely new pieces, it lacks the consciousness and creativity of humans, meaning it can only generate, not create, art. This may pose a threat to some artists who rely on imitation rather than innovation, but it can also serve as a source of inspiration for those who

1. Artificial Intelligence-generated painting of a man with multiple faces inspired by Picasso's *Three Musicians*

use algorithms to enhance their artistic practice. In the future, AI may even be used to evaluate the quality of art, but it will lack the necessary human understanding to truly grasp the significance of what it is producing (Hageback & Hedblom, 2021: 66-67). There are certainly creative ways to use AI to produce something new, for example, a previously hidden portrait of a crouching woman, painted by Pablo Picasso and subsequently covered over with another work, has been uncovered using a combination of artificial intelligence (AI), advanced imaging technology, and 3D printing.

The researchers responsible for the recreation used X-ray fluorescence (XRF) imaging and image processing to reveal the outline of the portrait, and then trained AI algorithms to add brushstrokes in Picasso's style. The resulting image was then given texture by generating a height map and printed onto canvas using 3D printing technology. While some in the art world have criticized the use of AI to create new works, others have praised the technique as an exploration of an artist's mind and a way to better understand history and culture (Guy, 2021). The rediscovery of hidden works by Pablo Picasso through the use of advanced imaging technology and artificial intelligence has shed new light on the artist's oeuvre and has the potential to significantly impact our understanding and appreciation of his work. However, this research takes a different approach by utilizing artificial intelligence to generate variations of Picasso's style that do not exist in any physical form. This innovative use of AI has the potential to provide new insights into the ongoing discourse on the role of technology in the production and interpretation of art.

Methodology

To ensure objectivity, we utilized OpenAI's Dall-E 2 artificial intelligence for both generating texts prompts and creating images. A sample size of n=10 text prompts was generated and n=4 was subsequently transformed into images. The prompts were created in OpenAI's newest text generation program and were worded as follows e.g. «Generate a portrait of a man with multiple faces, inspired by Picasso's *Three Musicians*». The text prompts were processed through OpenAI's Dall-E 2 program, which generated n=4 variations of each prompt, resulting in a total of n=16 images.

Analysis

The first task of the Dall-E 2 program was generating a portrait inspired by Picasso's *Three Musicians*, featuring a man with multiple faces [1]. The resulting composition depicted three distinct figures, each distinguished by their position: one central figure facing the viewer and two others facing the sides. Despite the presence of multiple costumes, the three figures appeared to be close to each other. The use of Dall-E 2 to generate variations of a portrait featuring a multi-faced man, inspired by Picasso's *Three Musicians*, presented a challenge for the software. Despite this, it was able to effectively convey the concept of a single individual with multiple faces through the use of a central figure holding an instrument and the placement of the other two faces on either side but without having any instruments. This demonstrates the capabilities of artificial intelligence in generating complex compositions based on artistic inspiration. On a chromatic level, the generated image deviates from the original composition in terms of the background color and the color palette used

2. A surreal painting generated by artificial intelligence of a woman with a bird's face inspired by Picasso's *The Dream*

3. A portrait painting of a woman with multiple faces and exaggerated features, in the style of Picasso's *Girl Before a Mirror*

to depict the man with multiple faces. While the background appears dark brown, similar to one of the musicians in the original *Three Musicians* painting, the colors used to illustrate the central figure differ from those in the original work, with only small instances of blue hues being retained.

The task of generating a surreal portrait of a bird-faced woman, inspired by Picasso's *The Dream*, presented a unique challenge for the software. The resulting composition displayed elements that were both similar and different from the original work **[2]**. While the background of the generated image featured a turquoise sky with a single cloud on the upper right, the original *The Dream* painting depicted two textures, one red on the right side and one green on the left. The female figure in the generated image was depicted as looking towards the viewer with open eyes, with half of her face in the shape of a bird, while in the original work, the figure's eyes were closed and the head was resting on the shoulder, suggesting sleep or a dream-like state. In terms of framing, the generated image was a portrait, while the original work captured the figure's body up to the waist. These differences demonstrate the capabilities of artificial intelligence in generating original compositions that are inspired by existing works of art. In terms of color, the AI-generated image in-

corporates elements of the original's palette, including white, red, blue, and yellow, with the bright red on the lips being an exact match to the original. Overall, the AI's ability to incorporate elements from the original artwork and adapt them to create a unique composition demonstrates its potential for generating complex and surreal compositions.

The generated composition differs significantly from the original *Girl before a Mirror* in terms of both the content and the chromatic palette **[3]**. While the original painting depicts a single woman observing her reflection in a mirror, the AI-generated work features multiple faces with exaggerated features, none of which are depicted as looking into a mirror. Additionally, the color palette used in the generated image diverges significantly from that of the original work, with a greater variety of hues being used to depict the different faces and their exaggerated features. Overall, the AI-generated image departs significantly from the content and style of the original *Girl before a Mirror*, suggesting that the software may have struggled to accurately interpret the prompt or may have been influenced by other factors in its generation of the composition. In terms of similarity, artificial intelligence attempts and partially succeeds in imitating the brushstrokes used in the original work. The AI-generated

artwork incorporates many of the original colors, but without regard for their placement.

Conclusion

The use of artificial intelligence (AI) in the field of art has the potential to challenge traditional conceptions of creativity and the role of the artist in the creation of art. While AI is capable of generating numerous variations on existing artworks or creating entirely new pieces, it lacks the consciousness and creativity of humans and can only generate, not create art. This raises important questions about the authenticity and value of AI-generated artworks, as well as the potential impact on the art market and the cultural significance of art. It is essential to consider the ethical and philosophical implications of integrating AI into the art world as it continues to advance and become more widely available. Further research is necessary to better understand the potential impact of AI on the creative process and the production of art, as well as to explore the potential for collaboration between humans and AI in the creation of art. The current study investigating the use of artificial intelligence in the field of art has several limitations that should be kept in mind when interpreting the results. One limitation is the small sample size, consisting of only 10 text prompts and 4 image variations generated for each prompt.

While this allows for a detailed analysis of the generated artwork, it may not accurately reflect the full range of capabilities of AI in generating art. A larger sample size would provide a more comprehensive understanding of AI's capabilities and limitations in this context. Another limitation is the study's focus on just one specific AI program, Dall-E 2. While this program has demonstrated impressive abilities in generating art, it is important to recognize that there are many other AI programs and algorithms that could potentially be used for creating art. Therefore, the results of the study may not be generalizable to all AI programs and algorithms. Another limitation is the prompts used in the study were based on the works of one specific artist, Pablo Picasso. While Picasso is a highly influential and well-recognized artist, the results of the study may not apply to other artistic styles and movements. It would be interesting to explore the capabilities of AI in generating art inspired by a range of different artists and artistic styles. Finally, the study did not address the ethical and philosophical implications of AI in the art world. As AI continues to advance and become more widely available, it is important to consider the potential impact on the art market, the value and authenticity of AI-generated artworks, and the broader cultural significance of art. Further research is needed to delve deeper into these ethical and philosophical questions. Despite these limitations, the study provides valuable insights into the capabilities and limitations of AI in generating art and raises important questions for future research.

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