

Meta Style: The Visual Maze of AIGC Art

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Abstract. This article aims to explore whether the visual style in AIGC art is constrained by certain factors that hinder the emergence of new styles and to analyze possible paths beyond this limitation. Methodologically, the article first deconstructs and subverts established visual rules in AIGC art from a post-structuralist perspective. Subsequently, it analyzes the limitations that AIGC art currently faces in innovation, namely, excessive reliance on imitating existing styles, from a perspective of technological philosophy. Finally, it proposes breakthroughs in style innovation for AIGC art through diversified training data, human-machine collaboration, and assimilating multicultural resources. The conclusion suggests that there is potential to surpass the 'visual maze' in AIGC art, but it requires progress in various aspects such as data, models, human-machine interaction to achieve this breakthrough. This will not only promote the development of AIGC art itself but also enrich the aesthetic experience of humanity.

1 Introduction

In recent years, technologies related to Artificial Intelligence Generated Content (AIGC), such as Generative Adversarial Networks (GANs), have experienced significant advancements. AIGC technology entails training on extensive image datasets and employs adversarial training between generative and discriminative networks, progressively enhancing the realism and richness of generated images. Models like DALL-E 2 and Stable Diffusion not only produce finely detailed and realistic images but also generate novel artistic images based on textual descriptions. This showcases a high level of computational algorithm-based multimodal image generation. AIGC technology has diverse applications, including text-to-image synthesis, style transfer, and image restoration. It transcends traditional artistic boundaries, enabling computers to produce highly creative visual artworks without human intervention.

Some scholars regard Artificial Intelligence in Generative Creativity (AIGC) as the dawn of a new era in digital art, positioning it as the third visual art form following photography and film, exerting a profound impact on human aesthetics. However, critics argue that AIGC works lack depth, representing a mechanical rearrangement of existing artistic elements and posing challenges to achieving genuine originality. Public opinion on AIGC art remains contentious. While some commend its strong visual impact and the advancements in creative tools, others find the generated works repetitive and lacking novelty. Some have even suggested that 'painting with AI will make you feel 'bored' after a

while,' indicating potential limitations in AIGC art concerning innovative styles.

Despite the profound influence of AIGC technology on visual art, its potential to generate entirely new styles is a subject of debate. This study aims to scrutinize its significance for future artistic style development through theoretical analysis, providing insights into understanding the essence of AIGC art.

2 Literature Review & Theoretical Foundations

2.1 Literature Review

With the widespread integration of artificial intelligence into artistic creation, a distinct art form, known as "AI Art," has surfaced, sparking intense debates regarding public attitudes and evaluations. The public's reception of AI art has been found to be closely linked to the perceived identity of the creator. When participants are aware that the creator is AI, they tend to provide negative evaluations for labeled AI art, even when compared to genuine human art with similar characteristics [1-2].

Presently, deep learning algorithms have showcased notable capabilities in generating and transforming images, particularly in the realm of portrait painting [3]. However, certain perspectives posit that the artistic and innovative dimensions of existing AI art are confined, predominantly revolving around the imitation of traditional art styles and grappling with fully harnessing the technical advantages of algorithms [4]. To elevate the originality of AI art, continuous optimization of deep learning models becomes imperative [5]. Furthermore, for meaningful human-machine collaboration, AI art

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systems must enhance their comprehension of human emotions and aesthetics, incorporating humanistic content to generate heightened artistic value.

Literature employing "AI" and "style" as keywords primarily concentrates on the technological facets of machine learning, computer vision, and style transfer. It unveils that "simulation" and "imitation" persist as the predominant modes of AI-generated art. Emerging AI generation tools, such as Midjourney and Stable Diffusion, showcase the tremendous potential of AI technology in artistic creation, surpassing humans in terms of generation effects and iteration speed. While these tools offer convenient avenues for a diverse array of artists, their efficiency also gives rise to concerns of homogeneity, necessitating enhancements in innovativeness. Consequently, the pivotal question arises: Can AI-generated art engender new visual styles?

In 1964, Danto proposed the concept of the "style matrix" in his article "The Art World." The matrix is designed to be applicable to any art form, transcending diverse forms. From a painting perspective, Danto contends that art styles can be differentiated using two dimensions: the abstraction level of themes and the refinement level of artistic techniques.

Firstly, the abstraction level of themes refers to the degree of abstraction in the themes expressed in artworks, spanning from realism to expressionism, abstract expressionism, and beyond. Secondly, the refinement level of artistic techniques pertains to the artist's mastery and application of artistic techniques, ranging from primitive to classical and perfectionist. When encountering a new artistic attribute, the matrix incorporates a column to indicate the potential for its "existence" or "non-existence." In the realm of painting, this can manifest as representational (or non-representational) and expressionist (or non-expressionist), resulting in four quadrants, as illustrated in Table 1.

Table 1. Stylistic matrix proposed by Danto in The World of Art (1964), with "+" for affirmative, "-" for negative, and F for "reproducible." G for "expressive".

F	G
+	+
+	-
-	+
-	-

Expanding beyond the confines of painting and examining the trajectory of art history introduces a third column, such as "decorative," yielding eight possible styles. Danto, in a later critique of his own style matrix in his 1997 work "After the End of Art," acknowledged its omission of specific historical contexts influencing artists' creative intentions. Consequently, he revised the style matrix, as presented in Table 2. Nevertheless, the style matrix furnishes a framework for art enthusiasts and historians to delve into the evolution and progression of art styles. It facilitates the understanding and comparison of stylistic features and distinctions among artists or works.

Table 2. Stylistic matrix proposed by Danto in After the End of Art (1997), "+" for positive, "-" for negative.

	Mannerism	Baroque	Rococo
1	+	+	+
2	+	+	-
3	+	-	+
4	+	-	-
5	-	+	+
6	-	+	-
7	-	-	+
8	-	-	-

Furthermore, George Kubler constructed a hexagonal model comprising six dimensions for visual style through a reductive approach. The six dimensions can be divided into two halves, with odd and even numbers corresponding to the lower and upper constructions, respectively. The parallel edges opposite to each other correspond to groups differentiated by shape, meaning, and time. When visual artworks are regarded as anonymous products made by craftsmen inheriting collective craft traditions, these three groups explain the fundamental characteristics of all these artworks.

In the AI art generation process, AI artists initially gather relevant images to form a corpus. Subsequently, a machine learning algorithm processes this "dataset," identifying common features among the images and formalizing their shared characteristics. This processing results in a "mathematical matrix," known among computer scientists as the "latent space." Through linguistic analysis, the system can then map various images as needed [6]. Consequently, intelligent generation tools are often perceived as a "black box," implying the difficulty for individuals to comprehend the internal workings and decision-making processes of the generation tool. In a way, the "black box" shares semantic similarities with the "matrix." The generation mechanism of AI art appears to be an intelligent manifestation of a "style matrix," with the dimensions of the matrix significantly expanded. Both the matrix and the black box have boundaries; does style also have boundaries? Will AI generation technology swiftly exhaust visual styles?

2.2 Theoretical Foundations

2.2.1 Post-structuralist Theory

Post-structuralist theory furnishes a pivotal perspective for scrutinizing the visual style attributes of AI-generated art (AIGC). Noteworthy post-structuralist thinkers, such as Roland Barthes, underscore the intrinsic contradictions embedded within classical rules and paradigms [7]. This perspective proves instrumental in dissecting how AIGC art subverts established visual language systems. For instance, Derrida contends that all artistic symbols and norms harbor self-contradictions, with meanings in perpetual flux. AIGC artists achieve a fragmented recombination of image elements by challenging traditional creative norms, echoing the collage and sampling concepts inherent in post-structuralist aesthetics.

Image scholar W.J.T. Mitchell observes that digital image technology induces visual symbols to lose fixed meanings, thereby permitting infinite recombination. This phenomenon vividly materializes in AI-generated art, where the fusion of personified stylized faces with non-human elements disrupts the visual rules of conventional styles, exemplifying the post-structuralist emphasis on blurred categorization features [8].

2.2.2 Philosophy of Technology

Heidegger's philosophy of technology offers a significant perspective for contemplating the visual style features of AIGC art. Heidegger contends that technology fundamentally serves as a mode of "revealing" [9], unveiling new dimensions of meaning in the world. AIGC art, functioning as a digital artistic technology, molds entirely new aesthetic approaches and visual languages. Specifically, AIGC art relies on the structured processing of extensive visual data, aligning with Heidegger's portrayal of technology's inclination to perceive the world as a "resource reservoir" for calculation and control. AIGC artists input images into models, subject them to algorithmic processing, and generate new works. This operational approach to technology shapes their choices in visual style.

The artistic images produced in AIGC art are profoundly influenced by the dataset. For instance, if the image corpus primarily comprises Western art, the generated Eastern art may bear distinct Western traces. Furthermore, dependence on specific technical methods imposes constraints on the visual innovation of AIGC art, resulting in various visual gaps, such as challenges in enhancing image resolution and a tendency towards stylistic homogenization. This underscores the impact of technology on visual aspects, urging us to engage in profound contemplation.

However, Heidegger also underscores the existence of "truth's possibility" within technology. The randomness and diversity inherent in AIGC art unveil new artistic forms, embodying the intersection of technology and the human spirit. Employing the philosophy of technology's perspective enables a critical examination of technological limitations while acknowledging the potential for aesthetic innovation in AIGC art. This offers philosophical theoretical support for the study of the visual features of AIGC art.

3 Post-Structuralist Interpretation of Aigc Art

3.1. Deconstruction of Symbols and Rules

In the realm of AIGC art, a profound deconstruction of established norms and inherent rules within visual art unfolds, facilitating the fragmentation and recombination of symbols. Unlike traditional painting, where artists adhere rigorously to rules such as perspective, proportion, and composition to faithfully represent the objective world, AIGC art boldly shatters these conventions. Ian

Chodikoff highlights the capability of AIGC algorithms to randomly distort facial or body proportions in images, thereby dismantling common norms found in figurative painting and giving rise to visually surreal effects [10]. Artificial intelligence art not only produces variations of existing masterpieces but also recombines elements originally crafted by humans [11]. The deconstruction and recombination of logical relationships between elements, such as embedding industrial parts into natural forms, disrupts conventional connections, resulting in visually unfamiliar experiences. In AIGC art, the fragmentation and recombination of elements emerge as ubiquitous techniques, subverting the traditional order of visual language and embodying the anti-establishment and anti-traditional features emphasized by post-structuralism.

Additionally, AIGC art challenges the visual grammar norms associated with specific art styles, exemplified by the color and form grammar of abstract painting. While abstract painting traditionally relies on simplified geometric forms and solid color blocks, AIGC abstract art introduces intricate details and textures, thus subverting this established rule. For instance, artist Anna Ridler employs AIGC algorithms to seamlessly incorporate natural elements like flowers into abstract paintings, resulting in a visually captivating mixed-style effect. AIGC further transcends normative color relationships in abstract art, achieving high-contrast aesthetics that defy traditional norms. Moreover, AIGC algorithms defy the brushstroke rules governing abstract forms, presenting a diverse range of expressions under digital effects. Through the deliberate deconstruction of specific style grammar, AIGC opens up new artistic possibilities.

Lastly, the random recombination of symbols and elements in AIGC art unveils the potential for the deconstruction of any visual rules. AIGC artists can prompt the algorithm to challenge a particular visual rule by altering the input, leading to unexpectedly blended images. Furthermore, the inherent randomness of the algorithm subverts visual rules, resulting in distorted facial features and exaggerated limb movements. Some artists intentionally leverage random combinations to explore the limits of rules, as seen in illustrator Whitney Sherman's work, where unrelated objects are mixed to achieve counterintuitive effects. These intentional disruptions of conventions can be mimicked, deconstructed, and surpassed by AIGC algorithms.

3.2 Fragmentation and Collage Aesthetics

The techniques of fragmentation and collage employed in AIGC art encapsulate the deconstructive spirit inherent in post-structuralism. Fragmentation entails the partial deconstruction and extraction of image elements, such as facial features in portraits or objects in landscape paintings. Subsequently, collage rearranges and combines these fragments to craft unexpected compositions. In the renowned work "Théâtre D'opéra Spatial" by Jason Allen, opera scenes with classical aesthetics are juxtaposed in a space setting, giving rise to a striking visual collision

between the futuristic and the classical. This technique subverts and reshapes relationships between elements, defying visual conventions with a pronounced sense of anti-tradition. Furthermore, AIGC artists leverage the algorithm's intrinsic randomness to autonomously fragment and collage images, pushing the boundaries of established rules. An illustrative example is the cutting and reassembling of portraits to achieve distorted bodily forms. This method of "digital self-combination" not only exemplifies the rebellious spirit of post-structuralism but also unveils the fluidity of meaning inherent in image symbols.

4 Techno-Philosophical Reflections on the Existence of AIGC Art

4.1 Subversion of Creativity by AIGC

AIGC disrupts traditional modes of artistic creation, challenging ingrained perceptions of the creative subject and process. In contrast to the subjective imagination of human artists, AIGC artworks emerge from algorithmic computations on data. Here, technology assumes a leading role, shifting the creative subject from human-centric to post-human. Moreover, AIGC art creation follows a non-linear trajectory; machines can generate from scratch, deviating from the linear growth of experience typical in human artists. This non-human mode of creation anticipates novel forms of artistic existence in the realm of post-humanism. Artist Mario Klingemann employs AIGC algorithms to produce a series of works he has never physically created, questioning the semantic attributes of creation. The impact of AIGC on artistic creation and existence compels us to contemplate these behaviors and subjectivities through the lens of techno-philosophy.

4.2 AIGC Foreshadows Aesthetics in Post-Humanism

The non-human mode of creation inherent in AIGC art anticipates emerging aesthetic forms within the realm of post-humanism. Post-humanism, by diminishing the centrality of humans, enables art to transcend the limitations of human perception. Architect Michael Hansmeyer employs GAN algorithms to craft intricate spatial scenes that extend beyond the boundaries of human perception and memory. Moreover, certain AIGC artworks achieve hyper-realistic depictions, presenting images that surpass typical human cognitive capacities in realism and detail. Post-humanist aesthetics delve into novel realms beyond conventional perception and cognition. AIGC art also introduces a distinctive aesthetics within the digitized domain. Digital artist Refik Anadol transforms city data into abstract light installations, offering a visual manifestation of the beauty inherent in urban data through artistic expression. These artworks, not dominated by human agency, open up new possibilities for aesthetics in the era of post-humanism.

4.3 Fragmentation and Collage Aesthetics

AIGC art encourages contemplation on the transformation of subjective agency in artistic creation. Some perspectives posit that computers merely execute algorithms, with humans supplying data and prompts, thereby remaining the creative subjects. Contrarily, alternative views propose that in AIGC art, both humans and technology actively participate, giving rise to a diverse form of subjectivity that is neither exclusively human nor purely computational. Post-humanist perspectives also suggest that subjectivity should undergo a metamorphosis within the human-machine relationship. For instance, AI artist Anna Ridler no longer exerts complete control over the creation process; instead, she "collaborates" with AI, offering stylized inputs while the algorithm generates output images. This collaborative approach challenges conventional perceptions of the creative subject. The advent of AIGC art prompts a reevaluation of subjectivity in the act of creation.

5 The Limits of AIGC Art and its Transcendence

5.1 Dimensions and Constraints of AIGC Simulating Existing Style Matrices

Currently, AIGC art grapples with limitations in its ability to faithfully mimic and recombine existing artistic styles, struggling to completely liberate itself from established visual expression patterns. Biases in data selection during the training process contribute to the alienation and stereotyping evident in AIGC art styles. Most publicly available pre-trained models heavily rely on Western art datasets, resulting in biased simulations of diverse cultural styles in AIGC art. For instance, an AIGC model trained on Western paintings that attempts to emulate Chinese ink wash painting might produce images with a noticeable cultural dissonance. Moreover, studies reveal racial biases in facial features within certain AIGC artworks; algorithms often exhibit preferences for generating Caucasian features in portraits depicting various racial traits. At this juncture, innovation in AIGC art predominantly lies in the reproduction and recombination of styles, necessitating a breakthrough from these entrenched artistic patterns.

5.2 Dimensions and Constraints of AIGC Simulating Existing Style Matrices

To broaden the scope of artistic styles in AIGC, several potential pathways can be explored. Firstly, diversifying training data emerges as a key strategy to liberate AIGC algorithms from limitations in mimicking specific artistic styles. Scholars propose adjusting the proportions of training data to confront algorithmic biases and enhance the diversity of generated images.

Secondly, maintaining a degree of human control proves essential in preventing AIGC art from succumbing to rigid mechanized stylistic constraints. Human intervention in the AIGC generation process

enables stylized expressions, fostering a collaborative relationship between humans and machines.

Lastly, for AIGC art to truly evolve, assimilating data resources from various cultural backgrounds becomes imperative. This approach opens avenues for exploring new aesthetic possibilities in human-machine interaction. By combining diverse data with moderated human involvement, AIGC art can transcend mere mechanical imitation and foster greater innovation.

5.3 Analysis of Intrinsic Drivers of Style Innovation

The inherent driving forces in artistic development hold the potential to propel AIGC art styles towards breakthroughs. As a specific artistic language reaches maturity, its inherent limitations often pave the way for the emergence of novel languages. Abstract art, for instance, liberated itself from the constraints of realistic depictions in representational art. A similar self-transcending impetus is essential for the evolution of AIGC art, relying not only on technological advancements but also on an internal drive toward innovation. Certain AIGC artists have already showcased this commitment to innovation, resisting the lure of repetitive existing patterns. They actively pursue the expansion of training data and explore new pathways in human-machine collaboration, with the goal of unlocking new stylistic dimensions. The inherent dynamism in artistic development within this context is poised to catalyze significant breakthroughs in AIGC art styles.

5.4 Expanding Style Frontiers through Human Ingenuity

The infusion of human ingenuity has the potential to imbue AIGC art with heightened imagination, broadening its scope for stylistic innovation. The synthesis of the rich experiences and emotions of human artists with the limitless potential of AIGC could give rise to new inspirations beyond existing constraints. This amalgamation supplies AIGC art with novel creative materials and perspectives.

Furthermore, some artists endeavor to explore entirely new visual languages through interactive engagement with AIGC, moving beyond a reliance solely on model outputs. They selectively input data based on their creative intentions and intervene strategically to shape the trajectory of artistic creation. Harnessing human wisdom to guide AIGC art creation is poised to catalyze significant stylistic breakthroughs. The collaborative nature of artistic creation within the realm of human-machine collaboration also carries profound humanistic and emotional connotations.

6 Conclusion

This article delves into the visual style of AIGC art and scrutinizes the phenomenon of visual perplexity it confronts. Through the lens of post-structuralism, we discern that AIGC art dismantles and reassembles visual

elements, manifesting a pronounced anti-traditional characteristic. This departure from established artistic norms not only challenges conventions but also offers avenues for visual innovation. However, viewed through the prism of techno-philosophy, AIGC art grapples with the quandary of being confined by algorithms and data patterns. Presently, AIGC art tends to excessively emulate existing styles, posing a considerable obstacle to achieving fundamental visual breakthroughs. Nevertheless, this challenge is not insurmountable. The diversification of training data and collaborative efforts between humans and machines present viable paths for AIGC art to explore new frontiers. Furthermore, the intrinsic drive of artistic development will propel AIGC art beyond its current limitations, ushering in new stylistic dimensions. The amalgamation and interaction of human wisdom with AIGC also imbue machine art with emotional warmth.

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