

The Depth and Complexity of Traditional Painting Versus AI-Generated Art: A comparative analysis using Van Eyck's Arnolfini Portrait

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This paper explores whether artificial intelligence (AI) can replicate the depth and complexity inherent in traditional art, using Jan van Eyck's The Arnolfini Portrait as an exemplar of traditional painting. Through analysis of AI art techniques like generative adversarial networks (GANs) and creative adversarial networks (CANs), the study identifies limitations in AI's intentionality, cultural context, creativity, originality, and emotional expression compared to human artists. It reveals gaps in AI's ability to consciously employ light, texture, and deviations from realism for artistic intent. While AI can mimic styles and patterns, it operates within computational constraints versus the subjective experiences of human artists. The study argues AI cannot replace the profound understanding of the human condition and nuanced aesthetic vision encapsulated in The Arnolfini Portrait. However, AI offers complementary capacities like novel combinations and democratized creation. Thus, this exploration of the intricacies of The Arnolfini Portrait and the boundaries of AI art contends that the future likely lies in integrating, rather than replacing, traditional art's irreplaceable qualities with AI's emerging potential.

Artificial intelligence. Generative Art. Jan van Eyck. Arnolfini portrait. Aesthetics.

1. AI IN THE CONTEMPORARY ART SCENE

The earlier explorations of contemporary art and artificial intelligence (AI) can be traced to the works of artist Harold Cohen, who utilized AI to create autonomous art-making systems as early as the 1970s (McCosker and Wilken 2014). He proposed rethinking big data, viewing it as a massive information collection and a visual phenomenon with aesthetic and cognitive dimensions. In recent years, the application of AI in art has exploded, with artists leveraging its capabilities to create an increasing number of new forms of interactive and generative art. For example, artist Refik Anadol uses data and AI to create immersive and aesthetic art installations (Anadol 2019). The pivotal moment in AI and art occurred in October 2018, when Christie's auction

house made a historic sale of an "AI art" piece. The artwork, "Portrait of Edmond Belamy," was the brainchild of the French art collective the Obvious (see Figure 1). This work employs a machine learning algorithm to process millions of images, creating a dream-like, hallucinatory visual narrative that blurs the line between reality and AIGC. It gained significant attention despite the collective's lack of established reputation and the piece's lack of technical innovation. This art piece, resembling a low-resolution, vaguely Edwardian portrait printed on canvas, fetched a staggering \$432,500 – nearly 45 times its initial estimated value (Cohn 2018). However, following the auction announcement, the most potent reactions emerged from other artists engaged in AI. Many of them critiqued the portrait, deeming it lacking originality and creativity.



Figure 1: *The Obvious, Portrait of Edmond Belamy, GAN algorithm, inkjet printed on canvas, 70 × 70 cm, 2018.*

These examples demonstrate that the collaboration between AI and art is not futuristic but a current and emerging reality reshaping the art world. The work of Elgammal et al. (Elgammal, Liu, Elhoseiny and Mazzone 2017) demonstrates that AI can provide a unique perspective on art creation and interpretation, challenging traditional notions of creativity and the artist's intent. They introduce Creative Adversarial Networks (CAN) – a form of Generative Adversarial Networks (GAN) designed to generate art by learning about styles and deviating from style norms. Their approach is to train the model on a dataset of artworks, enabling it to learn and reproduce various art styles. It then leverages this knowledge to create new, original art pieces that deviate from the learned styles.

While AI brings exciting possibilities to the art world, the question remains whether it can genuinely replicate and represent the depth and complexity inherent in traditional painting. To explore this question, we use Jan Van Eyck's masterpiece, the Arnolfini Portrait (see Figure 2), as a focal point. The Arnolfini Portrait showcases the intricate detail of its formal elements and the profound symbolism embedded within the painting. For example, the oranges catching the light, the arrangement of the signature location of written Latin "Jan van Eyck has been here," and the spiritual or religious significance represented in the mirror's narrative dimension all contribute to the painting's depth and complexity. The use of the mirror in the painting enlarges the spatial dimension and reflects the artist's geometric knowledge. This technique influenced future artists, such as Velázquez in his work *Las Meninas*, and projected an infinity in consciousness and a psychological infinity. This Arnolfini Portrait simplifies the real and symbolic worlds into equivalents, interacting with each other. We argue that the context and the subsequent influence it exerted on future art embedded in this iconic work

exemplify the depth and complexity that traditional painting offers – that AI, in its current state, struggles to emulate and even replace.



Figure 2: *Jan van Eyck, Arnolfini Portrait, oil on oak panel of three vertical boards, 82.2 × 60 cm, 1434.*

2. DEPTH AND COMPLEXITY OF ARNOLFINI PORTRAIT

Jan van Eyck, a pioneer of early Netherlandish painting, is celebrated for enhancing painting methodologies and inventing oil paint. His style, rooted in Gothic art, surpassed it in many aspects, offering a naturalistic and realistic perspective on the world. Using his exceptional skills with oil, van Eyck could blend and layer paint to accurately reflect reality (Gombrich and Gombrich 1995). His renowned work, the "Arnolfini Portrait" (1434), is an oil-on-oak depiction of Giovanni Arnolfini and his wife in their Bruges residence. The painting showcases a room with remarkable precision and is acclaimed for its extraordinary detail and mastery of light, featuring symbolic objects and a convex mirror reflecting the couple and unseen figures.

The enigmatic nature of van Eyck's work has intrigued art historians for generations. Scholars have endeavoured to uncover his pieces' geometric and spatial consistency, from the spatial composition to the use of mirrors. Italian historian Bartolomeo Facio extolled van Eyck's exceptional proficiency in geometry (hnanews 2020). Moreover, Maximiliaan P. J. Martens, in his discourse on van Eyck's "optical revolution," proposed that van Eyck gained expertise in geometry and optics through the mathematical advancements of Alhazen, an 11th-century Arab mathematician, astronomer, and

physicist after re-evaluating the influence of Pliny the Elder on van Eyck (Borchert, Dumolyn and Martens 2020). This evidence substantiates the theory of van Eyck's familiarity with the scholarly works of these two luminaries. Consequently, it is plausible that he incorporated geometric and optical knowledge into his artwork.

The tiny medallion featuring Christ's Passion in the convex mirror frame might symbolize God's promise of salvation for the figures reflected on the mirror's surface. The mirror precisely captures and differentiates surface appearances and textures, some related to Christ's life on the husband's side. It could also symbolize God's omniscient gaze, witnessing the marital vows and the Virgin Mary's purity. The mirror reflects two figures at the entrance, possibly including the painter himself, validating the marriage's legitimacy. Van Eyck's signature on the wall is a testimonial document, affirming his presence as a witness.

Van Eyck's technical mastery is evident in using thin layers of semi-transparent oil paint to create a painting rich in deep tones and vibrant colours, showcasing the Arnolfinis' affluence through their material possessions. He utilized the wet-into-wet technique (Alla Prima), applying fresh layers of paint onto previous layers that were not yet dry, allowing him to blend colours and manipulate light and shadow effects to enhance the painting's three-dimensional illusion. This technique enabled van Eyck to precisely capture and differentiate surface appearances and textures, such as the optical effects of direct and diffuse lighting from the window on the left. He also significantly enhanced the couple's attire's textures, details, and sensibilities, ensuring their stability and longevity in colour rendition. Complex elements, such as the representation of lions above and below the bride's wrists, were preserved despite their placement in the room's darker regions and neutral brown tones. According to scholar John L. Ward, the mirrored expressions of the lions symbolize demonic figures, and their positioning around the bride's wrists suggests potential threats to the marriage and the exchange of vows (Ward 1994).

In terms of the application of orthogonal projection in the painting, mathematician Karl Doehlemann asserted in a 1905 journal article that the parallel lines in the space of the Arnolfini Portrait do not converge to a single point. Instead, they converge onto a circular area with multiple vanishing points (Doehlemann 1906). Similarly, James M. Collier argued in his work, *Perspective in the Arnolfini Portrait*, that the spatial representation in van Eyck's piece is fundamentally chaotic, with perspective being depicted only intuitively (Collier and Carleton 1983). In the article *On the Arnolfini Portrait and the Lucca Madonna: Did Jan van Eyck Have a*

Perspectival System?, American art historian James Elkins noted that the extension lines of the floorboards in the painting converge to a singular vanishing point (Elkins 1991). However, he inferred that while van Eyck had a grasp of perspective, it was not entirely accurate, considering the hyper-realistic detail in works by Northern Renaissance artists that could compete with modern photography.

Despite this, several scholars persist in uncovering a concealed order beneath the painting's seemingly chaotic surface. Recent research has unveiled a remarkably ordered structure in the probability diagram of vanishing points within the Arnolfini Portrait, with four primary points periodically arranged along a marginally inclined vertical axis (see Figure 3) (Simon 2021). Leveraging the Helmholtz principle, Gilles Simon not only confirmed this fishbone-like pattern in the Arnolfini Portrait but also discovered similar structures in other van Eyck works, such as *Saint Jerome in His Study*, the *Lucca Madonna*, the *Dresden Triptych*, and the *Madonna in the Church*. This pattern would only emerge when employing a perspectival device with two degrees of freedom. The reconstruction of a 3D model that aligns with this pattern also suggests that van Eyck's device addressed questions regarding how to depict space aesthetically and scientifically in a manner most akin to human vision.

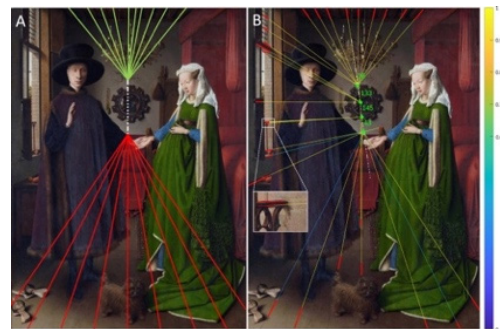


Figure 3: Gilles Simon, *Jan van Eyck's Perspectival System Elucidated Through Computer Vision*. (left) Manual reconstruction. (right) Reconstruction obtained with the help of computer vision, 2021.

Hermann von Helmholtz, the pioneer of contemporary perceptual understanding, introduced the Helmholtz principle. This principle articulates how objects are perceived in images: objects invariably appear in the field of vision as they would need to be to generate the same impression on the nervous system, assuming the eyes are being used under ordinary, normal conditions. Helmholtz acknowledged that illusions would arise if the environmental conditions or the functioning of the nervous system were abnormal. He further recognized that by reversing the process from illusory phenomena, the principles of normal and abnormal function could be inferred, enabling perception to transcend the limitations of the

physical object world and reveal its true nature (Gregory 2008, p.119). Nearly fifty years post van Eyck's demise, Leonardo da Vinci sketched a simplified version of what he referred to as a "perspectival device." This sketch illustrates and elucidates the method of using glass to formulate a perspective drawing: arrange a sheet of glass and secure it firmly between your eyes and the object intended to be drawn. Anchor the head behind the glass and position the glass so it is in a 2:1 ratio between the object and the artist. Subsequently, close one eye and trace the sections of the object visible through the glass on the glass, transferring this onto paper.

Through 3D reconstruction, Gilles Simon posits that van Eyck's device was more precise than Da Vinci's "perspectival device." In van Eyck's apparatus, the glass panel could move freely within its plane. This setup generated a configuration with multiple eyepieces evenly distributed along an inclined axis. This arrangement allowed van Eyck to trace the partial contours of natural objects viewed through each eyepiece and assemble them into a comprehensive image, thereby avoiding distortions at the edges of the drawing. Simon conjectures that van Eyck's multi-perspectival device likely evolved from earlier single-viewfinder devices, such as those envisioned by da Vinci. He hypothesizes that van Eyck would have alternated between closing his left and right eyes to provide two viewing modes for his device.

The Arnolfini Portrait showcases van Eyck's mastery of pictorial space through the depiction of a mirror (Ward and Carleton 1983; Seidel 1989). Janna Levin notes that the painting is often mentioned for its perfect depiction of non-Euclidean geometry, referring to the underlying geometric knowledge employed by van Eyck (Levin 2002). The distortions in the spherical mirror are accurately depicted, save for a few areas (Criminisi, Kemp and Kang 2004). In the article "Reflections of Reality in Jan van Eyck and Robert Campin," the authors put forth some simple yet rigorous technical analyses of the geometric accuracy of the convex mirror, drawing upon substantial computer vision literature. Remarkably, they refer to the area of composite imaging formation known as catoptric imaging. They evaluate the geometric fidelity of the mirror and the perspective rendering generated from the mirror's viewpoint, obtaining similar results for the spherical assumption and parabolic generation after making three different assumptions about the distances between three-dimensional scene points and the mirror. This suggests van Eyck intentionally modified the geometric shapes of certain parts of the mirror image (Hanley 2007). This remarkable discovery substantiates the artist's mastery of geometric knowledge and the transcendence of knowledge of image representation in geometry.

3. AI AS A NEW MEDIUM IN A LIMINAL STATE

AI art is in a liminal state and not yet fully mature. Artists can use tools like Google's DeepDream (Deep Dream Generator, 2023) and OpenAI's DALL-E (OpenAI 2023) to generate art pieces, creating dream-like or text-based images using Convolutional Neural Networks (CNNs), GANs, and Transformer Models based on deep learning and Natural Language Processing (NLP). However, AI art still has limitations compared to human-created art, particularly in depth and complexity.



Figure 4: Vasily Kandinsky, *Composition 8*, oil on canvas, 140.3 × 200.7 cm, 1923.

In "Generation of Kandinsky Art," the authors present a programmed experiment to automatically generate art in the style of Kandinsky during his Bauhaus years (see Figure 4) (Zhang and Yu 2016). The program that the authors developed analyses the artist's paintings based on the artist's art theories and the authors' understanding and observations of Kandinsky's artworks. The authors describe the generation process in detail and share and discuss sample-generated images styled according to four of Kandinsky's paintings (see Figure 5). However, these paintings are produced by simply analysing the style of the picture's colours, shapes, and other elements and drawing patterns to create works that appear stylistically uniform but are not the artist's own. It is important to note that Kandinsky did not use bright, rosy reds and bright purples during his artistic career, and even the yellow that appears in Kandinsky's paintings does not produce a bright yellow that exceeds the colour of the canvas due to the transparent properties of the pigment combined with the initial colour of the canvas. These mere resemblances and overlapping shapes still form an impalpable spiritual divide between art and AI. The interaction between the various paints and shapes that the artist applies to the canvas and the materiality of the space in which they are placed is not present in the flatness of the generated content. As Kandinsky brought his study of colours and shapes into his teaching (Jacobsen 2002), and even in the case of shapes, he spent an entire chapter on triangles in his book (Kandinsky 2012), a spiritual

choice that an AI does not have as a "personal preference."

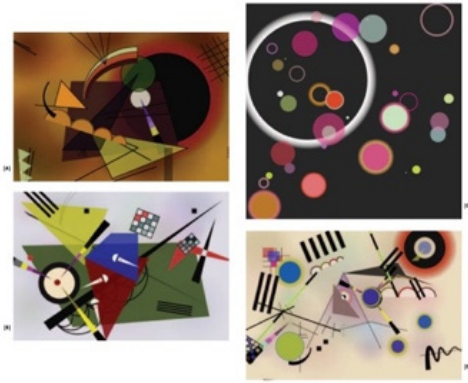


Figure 5: Kang Zhang, *Four Generated Paintings*, AIGC, 2016.

Lack of Intentionality: AI can generate images by analysing vast amounts of data, mimicking styles, and enhancing patterns (Cao et al. 2023). However, it lacks the understanding, intention, and creative vision behind its creations. The "illusion" created in the artwork does not result from AI's creative vision. As a product of mathematical functions and algorithms, AI has no emotional connection to the artwork and cannot construct spatial representations or convey personal messages through its "windows." Its output is determined by programming and data rather than an inherent "desire" to create.

Absence of Historical and Cultural Context: Art often reflects the time and culture in which it was created, as seen in "The Arnolfini Portrait" by Jan van Eyck, which is deeply embedded in the context of the Northern European Renaissance (Hall 1997). AI, however, cannot understand or reflect upon such contexts in its art. It generates art based on patterns identified in its training data, mimicking styles and generating novel combinations without understanding the meaning or context behind them (McCormack, Gifford and Hutchings 2019; Elgammal, A., Liu, B., Elhoseiny, M. and Mazzone, M., 2017). While AIGC might be aesthetically pleasing and technically impressive, it lacks the historical and cultural depth that often gives human-created art its significance.

Creativity and Originality: Creativity and originality, often considered hallmarks of art, involve generating new ideas, using materials innovatively, and creating unique aesthetic experiences. Human artists like Jan van Eyck create unique pieces influenced by personal experiences, insights, and cultural and historical context. In contrast, AI's artistic output heavily depends on its training data, lacking the personal experiences, insights, and conscious artistic choices that drive human creativity (Boden 2016; Du Sautoy 2019). While AI can

generate novel combinations and mimic styles, its "creativity" stems from algorithms and computations rather than a conscious, imaginative process, distinguishing human-created art from AIGC art.

Emotional Depth: Art often serves as an emotional outlet for artists and a medium for audiences to connect with these emotions (Schaverien 2005). The feelings an artist expresses through their work are crucial to making art human and relatable, imbuing it with depth and meaning. In contrast, AI lacks subjective experiences and emotions, making it challenging for viewers to connect emotionally with AIGC, even if they appreciate its aesthetic or technical qualities (Weiss 1995).

4. REVEALING THE GAP

Artworks are born from a complex timeline that evolves throughout creation. Artists must continuously adapt to the shifts in light and time throughout the day, adjusting the scenes they are crafting (Albers 2013). They operate on what could be described as a "massive, unpredictable database" that undergoes daily changes. This database is around them, a world that never ceases to change, where the light, colour, shape, and texture are constantly in flux. Artists are tasked with navigating their creative journey amidst this ever-changing environment. They must generate and conduct their scenes within the context of this dynamic landscape, a process that demands continuous adjustment and repetition. Unlike AI, artists need considerable patience and perseverance to bring their vision to life. As the natural light and reflections on objects continually shift, so do the artists, who adapt according to their circumstances. Just as the world changes, so does the artist's perception and interpretation, making the process of creating art a living, breathing endeavour.

In "The Arnolfini Portrait," the scene is not a photograph nor a perfect optical reproduction of reality. The "witnessing moment" captured in the scene is a purposeful selection, meticulously crafted by the artist from a sequence of time points. The artist employs light within the artwork to create a sense of depth and dimensionality. This light illuminates the couple and the objects in the room, creating highlights and casting shadows, enhancing the sense of realism. This light illuminates the couple and the objects within the room, instigating highlights and casting shadows that bolster the sense of realism. The natural light is visualized as coming from the window, and the artist has conceived of the light as a point source. We understand that the sun's trajectory determines the variance in the light streaming through the window during morning, midday, and late afternoon hours. As a result, the artist must adjust his "optical eye" to

his deeper heart of constructed and "imagined" scenes to present the dynamic interplay of light and shadow as accurately as possible. Apart from the constructed and "imagined" scene, which has its creative interpretation of light, Van Eyck's use of light and reflection is generally accurate in his artistic accomplishment. Still, there were minor inconsistencies or artistic liberties in the overall composition and aesthetic effect. When a human artist takes artistic liberty, they deviate from realism or convention for a particular effect or message (Danto 1981; Elkins 2019). They might exaggerate certain features, simplify others, or use colours and lighting in ways that aren't strictly realistic but serve their artistic vision.

As for the formal elements, particularly in terms of actual texture and visual texture, AI faces significant challenges when attempting to create a masterpiece like the "Arnolfini Portrait." AI cannot truly understand and recreate the subtle, dynamic interplay of light, shadow, and texture that gives a piece of art its unique character. This limitation becomes evident when we consider the intricate actual textures from oil paints and the visual texture in The "Arnolfini Portrait," From the richly depicted fabrics to the reflective surfaces, the final visual effects are an intricate interplay of actual and visual textures (Harbison 2012; Panofsky 1966). These textural details contribute significantly to the painting's lifelike quality and emotional resonance, elements that AI cannot fully emulate (see Figure 6).



Figure 6: Jan van Eyck, *The Detail of the Visual and Actual Textures in Arnolfini Portrait.* (left) The visual texture of the dog's fur. (right) The Actual texture made by oil paints, its physical property allows the audience to see the different light reflections from different perspectives, oil on oak panel of three vertical boards, 1434.

5. SURPASSING THE TECHNICAL LIMITATION – THE CHALLENGE OF AI ART

Despite its remarkable advances, AI still faces significant challenges in art creation. One limitation is the lack of understanding and interpretation of context and emotion. AI can replicate patterns and styles but cannot understand or convey the human experience as a human artist can. Another significant challenge is the reproduction of texture

and light, as seen in masterpieces like the Arnolfini Portrait. The subtle interplay of actual and visual textures, the dynamic shifts of light and shadow, and the emotional resonance these elements create are currently beyond the reach of AI technology.

According to Ron Cheng, a board member of the Yale Visual Arts Collective, there is a concern that the ease with which AI can create art might inadvertently lead to a reduction in the perceived value of art and a diminution of the artist's societal status. Furthermore, despite AI's capabilities to generate intricate concepts and striking illustrations, some argue that AI art lacks authenticity and fails to offer any meaningful critique of the world. Cheng believes there are enough human artists, and that AI shouldn't need to create art (Yale Daily News 2023). Brennan Buck, a senior critic and active architect at the Yale School of Architecture, utilizes AI as an auxiliary tool. He explains that during the initial stages of a project, AI assists him in tasks such as image colourization and upscaling. However, he emphasizes that these minor contributions from AI do not influence the creative or conceptual aspects of the design process (Yale Daily News, 2023). Yosvany Terry, a saxophonist, percussionist, composer, and senior lecturer on music and director of Jazz Bands at Yale, highlights another limitation of AI in art creation (Mineo 2023): "That sense of interplay, or the ability to react in the moment, is something that AI can't reproduce."

Harold Osborne placed his scrutiny on the surface of a work of art and started from its "unchanging qualities." He pointed out that the "vehicle" of the work of art is a kind of thing that has experienced time and remains unchanged when perceived and understood by the outside world – "enables the same organization of material to enter the experience of different persons at different times" (Osborne 1952). In contrast, AIGC art does not have physical properties that could be treated as unchanging qualities. The pictures change constantly when users input their prompts, even if they input the same content. These unchanging qualities in art, which do not exist in AI, persist beyond perception and have withstood the test of time, creating multiple possibilities for the same work of art in different experiences at different times.

According to the theory of Arthur Danto, who is a prominent art critic and philosopher, it has proposed the idea that the "Geist" (a German term often translated as "Spirit") of age could be understood through its finite material manifestations, including artworks (Birnbbaum 2023). This concept suggests an interrelation between physical objects and the larger socio-cultural context within which they exist. Since AI is a machine learning model programmed by humans, it doesn't possess personal experiences, emotions, or intentions in the human sense.

Therefore, the "intent" behind AI art could be considered as that of the programmers who designed the AI or the users who deploy it, but it is not the artistic intention. Instead, it is a technological intention.

Therefore, the definition and boundaries of AI in the art world may not have undergone such a great change. The symbols and data information of AI-generated art training models have not finally departed from the psychological category within the existing cognitive boundaries of humans. Since it cannot surpass the existing cognitive boundaries of humans, how can it create so-called "artworks" solely by relying on knowledge learning? If AI-generated art is called "original," it inevitably raises questions about the definition of artworks. Once again, it considers whether artworks can exist without aesthetic value. The latter is an entirely false proposition. The practice of stripping aesthetic value from artworks accelerates the death of art, which is the "emperor's new clothes" under Danto's art theory viewpoint, that is, directly equating art with abstract philosophical ideas, eliminating the most basic "expression" essence of art, and dismantling the marriage between artistic creation and aesthetic production.

In terms of the context of AI-generated art, it is still in the development process of contemporary art, which means it has to face the debate on the aesthetic value of contemporary art. Unlike postmodern art creation in the late 20th century and the first decade of the 21st century, AI art challenges the metaphorical and symbolic nature of the artistic expression of life reality at the virtual reality level. This is embodied in the further flattening of the meaning of language and image symbols in AI-generated art. Therefore, from the perspective of semiotics, analysing the symbol phenomenon of AI-generated art and its challenges to the generation of symbolic meaning and the embodiment of deep cultural connotations is an inevitable and indispensable process to explain the complexity of AI-generated art.

Taking the narrative dimension of the mirror as the access point, corresponding examples include Jan Van Eyck's masterpiece "Arnolfini Portrait," and Velázquez's artwork "Las Meninas", which reflect a narrative approach created through a "deep mode" of visual behaviour that emphasizes a subjective self-reproduction model. Through the mirror, the absent creator and the object represented in the painting are placed in the same visual field. The emergence of the mirror extends and creates a space for aesthetic appreciators to fully exert their imagination in an inherent two-dimensional image space, which establishes a holistic state structure for aesthetic appreciators to read and deconstruct the linguistic and pictorial meaning of artworks, forming

a symbol field combining virtual and real. The dynamic correspondence between the signifier and the signified in this field creates a birthplace of aesthetic value and meaning.

AI cannot truly possess "artistic intention" since AI is a machine learning model. It doesn't have self-awareness, emotions, or experiences and, therefore, cannot have a genuine artistic intention like a human artist. When we talk about AI "creating" artwork, we're essentially describing how AI generates output based on how it's programmed and trained. For example, if an AI is trained to mimic a specific artistic style, its works will reflect that style. If an AI is trained to mimic more artistic styles and has been asked to have its own, it collages partly from the given styles instead of creating. These are not because the AI consciously chose this style but because its designers and users decided on it. So, the role of AI in artistic creation at this stage is more akin to a tool or medium. As co-creators, human artists, designers, or users can guide the AI's output by setting parameters, choosing training data, and providing input, and this process can be partly seen as a manifestation of their artistic intention while it is still far away from the artist's spirit.

The spread of art, the value of artistic memory, artistic styles, and the formal elements of physical works are indeed driven by human processes. Human experiences, cultures, emotions, and subjective interpretations largely shape these aspects. While AI can produce art, it does not contribute to the development of art history as humans do. AI can be a tool for creating art and may influence the art world in various ways. The development and evolution of art history are fundamentally human endeavours. As of now, the ability of AI to understand and contribute to the complexities of art in a meaningful way is limited.

6. COMPLEMENTING, NOT REPLACING – THE FUTURE OF AI AND ART

The debate over AI's role in art often concerns whether it can or should replace human artists. However, AI can be seen as a complementary tool that enhances traditional art practices, working within parameters set by human developers. While AI can generate innovative and aesthetically pleasing artworks based on algorithms and machine learning, it lacks personal inspiration and emotional expression. This positions AI as a unique tool that can assist artists in exploring new creative possibilities (Colton 2012) without diminishing the value of traditional artmaking methods, just as the invention of photography did not replace painting but rather expanded the boundaries of visual art.

AI can process vast amounts of data, generate variations on a theme at an unmatched speed and volume (Colton and Wiggins 2012), and democratize art creation by making it accessible to people without traditional artistic skills. However, the AIGC art of today may be seen as a mere curiosity or fad in the grand scheme of art history. As AI technology advances, current AI artworks might be viewed as simplistic technical demonstrations rather than genuine artistic expressions, lacking human emotion, personal experience, and contextual understanding. The ease of generating AI art may lead to oversaturation, diminishing its novelty and perceived value over time. Future generations may regard today's AIGC art as a minor footnote in art history, with the art world ultimately rejecting AI as a legitimate creative force and maintaining the importance of human artists and their unique ability to convey emotion, tell stories, and reflect on the human condition.

7. CONCLUSION

Our exploration consistently shows that while AI is a powerful tool with the potential to revolutionize many aspects of art, it cannot replace the depth and complexity of traditional art, supporting our thesis that AI is a complementary tool rather than a replacement for human artists. The Arnolfini Portrait exemplifies the intricacies and depth of traditional painting, imbued with a profound understanding of the human condition, a nuanced interpretation of culture and society, and a deeply personal artistic vision. These elements, born from the artist's lived experiences, emotions, and subjective interpretations, add layers of meaning and complexity that AI cannot replicate. AI can mimic styles and generate visually pleasing images but lacks the emotional depth and experiential understanding inherent in human creativity.

Although AI brings unprecedented capabilities in data processing, pattern recognition, and production speed, traditional art offers an irreplaceable depth of emotion, complexity, and human connection. The future of art likely lies in the fusion of these two distinct yet complementary realms. As we explore and harness AI's capabilities in art, we should also appreciate and uphold traditional art's unique and invaluable qualities that make us intrinsically human.

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