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**The Algorithmic Artist: Rethinking Creativity and Authorship in the Age of AI**

**Introduction to the Question**

Edmond de Belamy, a Generative Adversarial Network (GAN) portrait created by the Paris collective Obvious, challenges the historical and traditional concepts of creativity and authorship. The slightly blurry canvas compared to works by the Old Masters was put on sale at Christie’s auction house on October 25, 2018. It ultimately sold for $432,500, dramatically exceeding its original estimate of $7,000 to $10,000 and sparking significant debate about the validity of machines as artists.¹ Is creativity an innate, exclusive trait of humans if AI can produce breathtaking work that evokes the same emotional response? This research will explore the implications of AI-generated art, particularly in terms of its impact on the definition of creativity and authorship in contemporary society.

This research problem is applicable to a much broader audience than the confines of scholars of art history or technology. Any person who creatively expresses themselves should find this relevant, including engineers, architects, visual artists, designers, and technologists. As AI continues to exponentially gain traction within creative industries, it forces us to promptly access the fundamental nature of art. While various commentators, such as Immanuel Kant, state art is defined through human emotion, experience, and intention, I argue AI-generated art like *Edmond de Belamy* has changed this understanding. Without addressing these concerns, we risk creating an unstable and non-concrete understanding of art, authorship, and creativity.

This essay seeks to answer: **How does the rise of AI-generated art, particularly *Edmond de Belamy*, challenge the public’s assumption of the traditional concepts of creativity and authorship in the art world?** Through a review of relevant academic literature, philosophical discussions, and case studies, this paper aims to examine how AI-generated art reshapes our cultural, legal, and economic frameworks, providing guidance for understanding the future of art in the digital age.

**Identifying Context of the Research Problem and Its Importance**

This portrait, created by using machine learning algorithms, sold at Christie’s auction in New York for a shockingly high price, placing AI-generated art within the commercial art market. Christie’s, one of the world’s most prestigious auctions, has always paid attention to shifts in the art market and how technology influences the creation and consumption of art. Richard Lloyd, International Head of Prints and Multiples at Christie’s, stated, “AI has already been incorporated as a tool by contemporary artists and as this technology further develops, we are excited to participate in these continued conversations. To best engage in the dialogue, we are offering a public platform to exhibit an artwork that has entirely been realized by an algorithm”2 . It was signed with a section of the algorithm’s code rather than an artist: “min G max D x [log (D(x))] + z [log(1 – D (G(z)))]”, reflecting mathematical origins.3 It’s important to mention that the co-founders Pierre Fautrel, Hugo Caselles-Dupré, and Gauthier Vernier had no art backgrounds but were intrigued by the idea of using machine learning to create art. They used 15,000 images of portraits to train a system that could mimic historical works. This approach was created to challenge the notion of art as an exclusively human work, allowing the machine to function as a creative agent.

During the time of this sale, GANs, which used machine learning to generate images by meshing two neural networks against each other, were already being used and recognized as an innovative AI technique that expanded beyond visual art and into music, literature, and even fashion. In 2019, OpenAI’s MuseNet, a deep learning model that could create original music, showed how AI could contribute to other artistic fields.4 Similarly, Refik Anadol, an artist known for his use of AI, was creating artworks that combined media and architecture, such as his *Machine Hallucinations* series, which utilized GANs to turn datasets into visual representations of landscapes.5 These works, like those of Obvious and OpenAI, are examples of how AI began reshaping creative practices and pointed to the increasing sophistication of AI's ability to contribute to artistic domains.

It has been commonplace that creativity in art has been bound to experiences and emotions. One aspect of art’s value has previously been derived from the artist’s ability to convey their thoughts, emotions, or cultural themes. Immanuel Kant's *Critique of Judgment*, written in 1790, supports this claim as he states that the significance of art lies in its capacity to evoke an emotional response from the artist's experiences and expressions.6 Art is only meaningful when it produces a universal emotional resonance, reflecting the artist’s ability to communicate deeper experiences of human existence. However, AI does not rely on emotions or lived experience. Instead, it relies on vast datasets and statistical patterns to generate new content. AI-generated works, such as *Edmond de Belamy*, raise more questions about the definitions of art and creativity: if a machine can generate art that can cause emotional responses from humans, can it be considered as creative as human-made art?

As AI systems become increasingly adept at creating emotion-provoking art, conceptions about its authorship and creative roots become increasingly strained. The questions that arise about *Edmond de Belamy*, and other AI-generated art will continue to challenge the public on the traditional concepts of creativity and authorship. It is the responses to these questions that will shape the future of the art world. Unresolved issues about authorship could lead to confusion as machines engage in roles usually done by human artists. Legal uncertainty may arise around the ownership of such art if IP laws do not track these technological advances. Furthermore, innovative artistic forms could be hindered along with the collaborative process between human artists and AI if there is not a clear framework for understanding AI’s role in art creation.

**Literature Review**

The implications of the emergence of AI-generated art and its impact on creativity, and authorship can be addressed by diving into academic literature that currently exists. This literature will include the technological aspects of AI, such as Generative Adversarial Networks and their creative potential. It is also worthwhile investigating literature that includes the philosophical and ethical questions that involve the combination of technology and art, providing more context for the debate. The randomness inherent in the art of AI could introduce a new form of creativity that challenges our understanding of artistic intentionality. To navigate these questions, I will analyze a collection of sources, some of which are peer-reviewed articles, critiques of AI in the art, and philosophical examinations.

Mazzone and Elgammal (2019) discuss AI's role in art creation, focusing on how algorithms, such as Generative Adversarial Networks, can be used as tools by artists to create art. GANs consist of two neural networks, the generator and the discriminator, that work in opposition to one another. The generator produces images, while the discriminator evaluates them against real images, providing feedback that improves the generator. They argue that "In this kind of procedure, AI is used as a tool in the creation of art. The creative process is primarily done by the artist in the pre- and post-curatorial actions, as well as in tweaking the algorithm".7 This allows the reader to better understand AI’s role in art, positioning it as a tool rather than an autonomous creator. The artist guides the AI, curating data and refining the outputs, ensuring that AI functions as a tool for exploring new artistic possibilities. This process, built on art theory and computational creativity, is supported by empirical evidence showing how artist-guided AI can generate novel works. Mazzone and Elgammal's work provides a strong foundation for understanding how machine-generated art, such as *Edmond de Belamy*, is a product of collaboration, where human decisions ultimately drive the creative outcomes.

McCormack et al. (2019) provide a philosophical and ethical perspective on AI in art by emphasizing that it is a tool where the artist’s decisions guide the creative process. They argue, “artists and researchers have worked with such systems because they value their ability to exploit autonomous (in the self-organising, homeostatic sense) processes, while often (incorrectly) ascribing autonomy in the intentional sense to them”8. This supports the view that AI can serve as a resource artists can use to explore new forms of self-expression. They strengthen their argument by combining art theory and technology. They also stress, " the artist’s intention, then, is critical, and intertwined with issues a work’s authenticity"9, further highlighting the importance of the artist's decision-making. McCormack et al. also explore how AI challenges ideas of authorship, specifically the Romantic notion of the artist as solitary and emotionally driven. They observe, " our current understanding of authorship is rooted in the Romantic movement," and suggest that AI disrupts this by enabling artistic production that doesn’t rely on human emotional intent10. This insight helps frame the debate about the legitimacy of AI-generated art by positioning it within a broader discussion of how AI tools complement and challenge traditional art-making practices.

Ploin et al. (2022), a group of scholars focused on the intersection of AI and art, expands on the challenges AI poses to the concepts in question. They emphasize that AI is more than a tool; it is an active participant that allows for novel outcomes. As one artist notes, “the model made these weird, eerie, non-tulip tulips… You can never tell it to do the type of things that it will come out with”11. This unpredictability in AI art introduces a new form of creativity that defies complete human control while engaging artists in a process of trial and error. Furthermore, Ploin et al. highlight that AI art shares similarities with other forms of generative art, where artists relinquish full control over the outcome, allowing external elements to influence the creative result. As Bailey, a curator, reflects, "there’s a lot of trial and error and accidents in that work… at the moment, AI art is a similar process"12. This perspective supports the idea that AI-driven creativity, while stemming from machine learning algorithms, allows for a blend of human guidance and machine-generated surprise. By drawing analogies with environmental art, such as Ridler’s comparison to land and environmental artists who "allow elements that they can’t control, like the weather or dust" to influence the work13, Ploin et al. suggest that AI art requires a similar balance between human intention and unforeseen results. This shift in creative agency challenges traditional conceptions of authorship, urging us to reconsider the roles of both human artists and machines in the artistic process.

Building on this, Boden, a leading figure in the study of creativity and cognitive science, broadens our understanding of creativity within her book *Creativity & Art: Three Roads to Surprise* by suggesting it is not limited to humans. She defines creativity as "the ability to come up with ideas or artifacts that are new, surprising, and valuable"14, and argues that, through learning, machines can also demonstrate creativity. Boden’s work is significant to this discussion because it integrates cognitive science and AI while demonstrating that creativity can extend beyond human capabilities. Her framework is particularly relevant as it allows for the consideration of randomness and unpredictability within machine learning processes as forms of creativity. As AI-generated works, like those created with GANs, often produce outcomes that cannot be anticipated, they introduce an element of chance. Boden’s ideas suggest that this randomness could represent a new creative force, challenging previously stated notions that creativity must stem from human intention. This idea directly supports my research question by providing a framework to view the surprising, often unpredictable outputs of AI-generated art as legitimate forms of creativity, which are reshaping authorship and intentionality in the art world.

**Historical Sources and Data Collection**

To better understand AI's role in the broader context of art history, authorship, and creativity as well as the debates that surround modern AI art like *Edmond de Belamy*, it is crucial to draw from historical sources and datasets. Dating back decades, the history of algorithmic art was pioneered by figures like Harold Cohen, Michael Noll, and Frieder Nake. They led the early explorations of computers as tools for artistic expression. These early works laid the foundation for today's AI-generated art while also establishing a long tradition of computational creativity. By examining these historical examples, we gain insight into the evolution of computational art that helps us better understand the place of AI in art-making today.

The study of AI-driven art can be traced back to Harold Cohen and his AARON program, which created artwork autonomously. Cohen’s work laid the foundation for understanding how machines can generate art. Exploring his outputs and programming will help contextualize the evolution of AI art and provide a perspective on how the creative roles of humans and machines have shifted. This historical context is critical for my research, as it allows me to examine how AI art has developed over time and how it challenges traditional ideas.

Additionally, other early figures like Georg Nees and Frieder Nake, who used algorithms in art, are essential to understanding the historical progression that led to AI-generated art. Their works contribute to the dialogue about whether machines can participate in creative processes, which is central to my investigation of AI's role in redefining creativity.

Beginning in 2012, the International Conference on Computational Intelligence in Music, Sound, Art and Design (EvoMUSART) conference series started shaping the conversations on computational intelligence in art. The conference offers case studies and critiques by providing insight into the technological and philosophical developments that have shaped AI art. I can trace the intellectual trajectory of AI’s integration into creative processes, particularly in relation to philosophical ideas about authorship, intentionality, and human agency, by examining the proceedings of these conferences. These discussions will contribute to my understanding of how AI challenges the traditional boundaries between human and machine creativity, as the AI art field has increasingly blurred these lines.

Data is a critical element in AI art creation. Datasets like WikiArt, which contains millions of artworks, are used to train AI systems. Analyzing datasets, such as the 15,000 portraits used by Obvious for *Edmond de Belamy*, will help contextualize how the training data influences AI's output. GANs rely on these datasets to produce new forms of art. Understanding the technical foundation of GANs and how the machine's outputs are shaped by human input will deepen my understanding of the role of both human decision-making and machine autonomy in AI art. Reviewing key papers on GANs, like Ian Goodfellow’s 2014 work, will provide a comprehensive understanding of the technology behind AI art and how it is used to challenge the concept of creativity as an exclusively human trait.

Auction data will serve as a crucial historical source for understanding the relationship between AI-generated art and philosophical ideas about creativity and authorship. The sale of *Edmond de Belamy* at Christie’s for $432,500 was a significant moment that signaled the increasing legitimacy of AI art in the market. By tracking the prices of AI-generated works at major auctions like Christie’s and Sotheby’s and seeing how the markets respond, it will reveal how they challenge longstanding views of art as inherently tied to human emotion. If AI-generated art continues to be highly valued, it may indicate a shift in societal perceptions of creativity and authorship, pushing us to reconsider the roles of both human and machine in the creation of art. This shift in valuation reflects a broader philosophical and ethical discussion, illustrating how the market’s reception of AI art mirrors the changing boundaries of what is considered “authentic” art in the digital age.

**Anticipated Challenges and Tentative Answers**

I anticipate key challenges as I explore the implications of AI art: defining and understanding the boundaries between human and machine creativity. Kant’s and other Romantic thinkers’ framework of art has had a focus on the artist’s emotions, intentions, and personal experiences. AI’s involvement in creating art challenges this framework because it lacks personal experience and subjective intent. Resolving this challenge requires a technical understanding and a philosophical investigation of what constitutes creativity. A possible resolution is to explore the concept of “co-creation,” where the human artist mold the outcome of AI-generated art through data curation and decision-making. This would help bridge the gap between the technical role of AI and the human artist’s guidance in the creative process.

The legal system surrounding ownership and authorship of AI art poses another challenge. As AI systems, specifically GANs, become more autonomous in their creative processes, questions surrounding intellectual property rights and authorship are becoming more important. This challenge is complicated because IP laws were created with human artists in mind and are not meant to address the complexities introduced by AI. A comprehensive review of existing IP laws to determine their applicability in the context of machine-created art will be required to address this issue. A possible resolution includes updates to IP law that recognize AI-generated works as a form of collaborative creation, including clear guidelines on the distribution of rights between human and AI contributors. Additionally, it might be needed to establish a new category of intellectual property specifically designed for machine-generated works. This would ensure that the legal system evolves to accommodate the new challenges posed by AI in creative processes.

In conclusion, AI-generated art, such as *Edmond de Belamy*, challenges concepts of creativity and artistic value. This research examines the philosophical, historical, and legal impacts of AI in art while highlighting how it introduces new forms of creativity driven by randomness. However, challenges remain such as defining boundaries between human and machine creativity, addressing legal uncertainties about ownership, and examining the ethical concerns surrounding AI art. To resolve these issues, it is essential to update intellectual property laws while rethinking the concept of co-creation. As AI continues to evolve, it is necessary to develop frameworks that recognize human and machine contributions, reshaping our understanding of creativity and authorship in the digital age.

**Footnotes:**

1. "Obvious' AI Art Sells for $432,500 at Christie's, Sparking Debate on Machine Creativity," *CNN*, October 25, 2018, <https://www.cnn.com/style/article/obvious-ai-art-christies-auction-smart-creativity/index.html>.
2. Richard Lloyd, "AI and Contemporary Art: A Conversation," *Christie’s Auction House*, 2018, https://www.christies.com/features/AI-and-Contemporary-Art-a-Conversation-9379-3.aspx.
3. "min G max D x [log (D(x))] + z [log(1 – D (G(z)))]" as part of Obvious AI Art's algorithm, in "Obvious' AI Art Sells for $432,500 at Christie's, Sparking Debate on Machine Creativity," *CNN*, October 25, 2018, <https://www.cnn.com/style/article/obvious-ai-art-christies-auction-smart-creativity/index.html>.
4. *MuseNet*, OpenAI, <https://openai.com/blog/musenet>.
5. Refik Anadol, "Machine Hallucinations: Nature Dreams," Refik Anadol Studio, <https://refikanadol.com/works/machine-hallucinations-nature-dreams/>.
6. Immanuel Kant, *Critique of Judgment* (1790), trans. James H. Bernard, 2nd ed. (Indianapolis: Hackett Publishing, 1987), 75.
7. Marian Mazzone and Ahmed Elgammal, "Art, Creativity, and the Potential of Artificial Intelligence," Arts 8, no. 1 (2019): 26, [https://doi.org/10.3390/arts8010026:contentReference[oaicite:0]{index=0}](https://doi.org/10.3390/arts8010026:contentReference%5boaicite:0%5d%7bindex=0%7d).
8. Jon McCormack, Toby Gifford, and Patrick Hutchings, "Autonomy, Authenticity, Authorship and Intention in Computer Generated Art," EvoMUSART 2019: 8th International Conference on Computational Intelligence in Music, Sound, Art and Design (2019), [https://arxiv.org/abs/1903.02166:contentReference[oaicite:0]{index=0}](https://arxiv.org/abs/1903.02166:contentReference%5Boaicite:0%5D%7Bindex=0%7D). 6
9. Ibid., Section 2.1.
10. Ibid., Section 2.2.
11. Anne Ploin, Rebecca Eynon, Isis Hjorth, and Michael A. Osborne, "How Machine Learning Is Changing Artistic Work," AI and the Arts, 2022, <https://www.aiandthearts.org>. 42
12. Ibid., 58
13. Ibid., 58
14. Margaret A. Boden, Creativity & Art: Three Roads to Surprise (Oxford: Oxford University Press, 2016), 29.

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