

**Charting a Paradigm Shift:
The Impact of Christie's Auction of AI-generated
Edmond de Belamy on the Evaluation of Art**

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Abstract

The following analysis explores debates sparked by Christie's auction of Obvious' *Edmond de Belamy*, questioning the change in traditional notions of art, authorship, and creativity, tied to the conception of value (creation) of an artwork. These debates prompted a critical inquiry into the applicability of Kuhn's concept of a paradigm shift to the auction. Moreover, this inquiry leads to the identification of the new meanings these notions have acquired following the event, drawing insights from different fields of research, mainly philosophy, art history, and media studies. Furthermore, this event is found to parallel the shift in the acceptance of photography as an art form, as for the shift in the significance of the same notions. Consequently, a comparative analysis of *Edmond de Belamy* to Eadweard Muybridge's *Animal Locomotion* photographic series displayed at Swann Galleries' auction in 1952 further underscores the occurrence of a paradigm shift in 2018, together with drawing attention to Christie's influence in driving this shift. Last, the inquiry paves the way for interdisciplinary research, particularly its link to the political economy, to better understand the evolution of value creation, and the varied perspectives through which it can be observed.

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Introduction



Figure 1: *Edmond de Belamy*.¹

AI-generated images began circulating in the last decade, notably in 2015 with “Google’s pattern-finding software DeepDream.”² However, the pivotal development occurred a year earlier with Ian Goodfellow’s invention of Generative Adversarial Networks (GANs), whose operation, reliant on two competing networks, made it possible to generate realistic-looking images from given datasets.³ The year 2018 witnessed a historical event with the first-ever auction of an AI-generated portrait by the worldwide leading auction house Christie’s.⁴ Marking a breakthrough event, *Edmond de Belamy* (Figure 1), created through GAN technology by the French collective Obvious sold for \$432,500 in New York, surpassing its initial estimate by over 40 times.⁵ *Edmond de Belamy*’s inclusion in such a prestigious auction and its exorbitant outcome sparked controversy and debates involving academics from various disciplines.⁶ These discussions ranged from the use of an algorithm derived from open-source software developed by the then-19-year-old artist Robbie Barrat, who received no recognition in the auction, to inquiries around AI’s capacity to generate what can be deemed art, concurrent with

¹ Obvious, *Edmond de Belamy*, 2018, inkjet printed on canvas, 70x70 cm.

² Tim Schneider and Naomi Rea, “Has Artificial Intelligence Given Us the Next Great Art Movement? Experts Say Slow Down, the ‘Field Is in Its Infancy,’” *Artnet News*, 2018, <https://authenticationinart.org/wp-content/uploads/2018/09/ai-art-infancy.pdf>.

³ Ian J. Goodfellow et al., “Generative Adversarial Networks” arXiv, June 10, 2014, <https://doi.org/10.48550/arXiv.1406.2661>; Taylor Brook, “Music, Art, Machine Learning, and Standardization,” *Leonardo* 56, no. 1 (2023): 84; Mikel Arbiza Goenaga, “A Critique of Contemporary Artificial Intelligence Art: Who Is Edmond de Belamy?” *AusArt* 8, no. 1 (2020): 52.

⁴ Goenaga, “A Critique of Contemporary Artificial Intelligence Art,” 51.

⁵ Jimmy Im, “This Portrait Made by A.I. Just Sold for \$432,000 — That’s 40 Times the Original Estimate,” *CNBC*, October 25, 2018, <https://www.cnbc.com/2018/10/25/portrait-made-by-artificial-intelligence-sold-for-432k-at-christies.html>.

⁶ Schneider and Rea, “Has Artificial Intelligence Given Us the Next Great Art Movement?”

the emergence of what Obvious termed ‘GAN-ism.’⁷ Moreover, the auction of *Edmond de Belamy* was contested by the same exponents of the AI movement.⁸ Mario Klingemann, a pioneer in the use of GAN technology (featured at Sotheby’s the following year for his GAN-generated work *Memories of Passersby I*) highlighted that ‘no one in the AI and art sphere really considers them [Obvious] to be artists.’⁹

Following the auction, contemporary academics such as Lev Manovich and Mikel Goenaga have inquired about the shift in the definition of art brought by AI, addressing the process of value creation in the arts, traditionally tied to notions of authorship and creativity. However, the inquiry around the shift in the significance of these concepts is not novel: a similar debate arose after 1839 when the daguerreotype made its first public appearance in Paris.¹⁰ Photography, as we know it today derives from an evolution of the camera obscura, possibly dating back over 2000 years ago in China, which functioning was based on light trespassing a hole in a dark room.¹¹ However, it wasn’t until the 1830s, with the introduction of the Daguerreotype, which enabled the capture of permanent and detailed images, that it gained its name and widespread usage.¹² Yet, photography came to be regarded as an artistic medium only a century later.¹³ Specifically, the medium’s affordances, such as in the case of GANs-generated images, led to a new form of evaluation, where auctions played a major role in elevating the status of photography, previously contested, to art.

I believe that examining these concepts through the case of *Edmond de Belamy* in parallel with Eadweard Muybridge’s *Animal Locomotion* series, auctioned at Swann Galleries in 1952, offers valuable insights into the dynamics of today’s leading auctions (e.g. Christie’s) and their influence in reshaping criteria for judgment within the art world.¹⁴ In particular, the debate has prompted me to question whether Thomas Kuhn’s conception of paradigm shift has already manifested through the auction of *Edmond de Belamy*.¹⁵ Furthermore, this inquiry sparked my interest in researching how the shift around the conception of value creation intersects with the political economy, implying an

⁷ Brook, “Music, Art, Machine Learning, and Standardization,” 84; Schneider and Rea, “Has Artificial Intelligence Given Us the Next Great Art Movement?”

⁸ Schneider and Rea, “Has Artificial Intelligence Given Us the Next Great Art Movement?”

⁹ Ibid.; Mario Klingemann, *Memories of Passersby I*, 2018, two 4k screens, custom handmade chestnut wood console.

¹⁰ “The Daguerreotype Medium | Articles and Essays | Daguerreotypes | Digital Collections | Library of Congress,” web page, Library of Congress, Washington, D.C. 20540 USA, accessed April 1, 2024, <https://www.loc.gov/collections/daguerreotypes/articles-and-essays/the-daguerreotype-medium/>.

¹¹ “History of Photography | History, Inventions, Artists, & Events | Britannica,” April 22, 2024, <https://www.britannica.com/technology/photography>.

¹² “History of Photography | History, Inventions, Artists, & Events | Britannica.”

¹³ “History of Photography | History, Inventions, Artists, & Events | Britannica.”

¹⁴ Eadweard Muybridge, *Animal Locomotion: An Electro-Photographic Investigation of Consecutive Phases of Animal Movements* (Philadelphia: University of Pennsylvania, 1887), selected plates displayed Swann Galleries, New York, February 14, 1952.

¹⁵ Thomas S. Kuhn, *The Structure of Scientific Revolutions*, 2nd ed., enl.6th impr, *International Encyclopedia of Unified Science*, vol. 2, no. 2 (Chicago: University of Chicago Press, 1975).

interdisciplinary understanding. Hence, I developed the following research question: how does the auction of *Edmond de Belamy* exemplify the paradigm shift in the way art institutions assess (AI) art, particularly concerning the changing notions of authorship and creativity, both linked to the value creation process? How can the shift in value creation be assessed under interdisciplinary lenses, relating it to the political economy?

Given the current proliferation of image generators, which has been further accelerated by OpenAI's release of DALL-E, a system capable of generating images from textual prompts, it becomes important to ascertain the moment the medium altered the artistic landscape.¹⁶ Thus, I aim to demonstrate that 2018 marked the onset of a paradigm shift (in a Kuhnian sense) that occurred through the auction of *Edmond de Belamy*, led by Christie's authoritative role in shaping the evaluation of art. Furthermore, I propose that this shift warrants further examination from a political economy perspective, given the auction's capacity to impact market dynamics. To reach these conclusions, the analysis will encompass the following sub-questions:

1. How does Kuhn's theory on paradigm shifts apply to the realm of art in the context of *Edmond de Belamy*?
2. How does the auction of *Edmond de Belamy* reflect a paradigm shift in the notions of art, authorship, and creativity?
3. How did the exhibition of Muybridge's *Animal Locomotion* by Swann Galleries reflect a shift in the same notions, further underlining auctions' role in shaping the understanding of the artistic landscape?
4. In what manner can the transition in value creation be authenticated from a political economy standpoint, akin to how market dynamics affected value creation during the advent of the photographic shift?

¹⁶ Will Knight, "Where the AI Art Boom Came From—and Where It's Going," WIRED, January 12, 2023, <https://www.wired.com/gallery/where-the-ai-art-boom-came-from-and-where-its-going/>.

Theoretical Framework

The concept of paradigm shift, pivotal to this analysis in the way it aids in addressing the first sub-question, stems from Kuhn's seminal work *The Structure of Scientific Revolutions*.¹⁷ The concept of paradigm, encompassing "core ideas, methodologies, language, and theory" adopted by scientific communities, serves as a foundation for Kuhn's theory.¹⁸ Specifically, Kuhn's paradigm shifts arise from moments of disequilibrium brought about by "anomalies," leading to a scientific revolution and to the replacement of the established paradigm.¹⁹ The connection between Kuhn's framework and the art world, which in turn influences my application of the concept to the auction of *Edmond de Belamy* is provided by Robert Scott Root-Bernstein. In "On Paradigms and Revolutions in Science and Art: The Challenge of Interpretation," Root-Bernstein argues for the similarity between science and art, and underlines how artists, like scientists, "must introduce new methods, new perceptions or new phenomena that raise new problems for colleagues to address" to initiate a Kuhnian revolution in the field of art.²⁰ Furthermore, Kuhn's theory of paradigm shifts elucidates the process by which the establishment of a new paradigm undergoes evaluation by various groups of scholars to attain recognition.²¹ Consequently, Kuhn's theory contributes to elucidating Christie's authoritative role in shaping shifts in the world of art.

American philosopher George Dickie's understanding of the definition of art, another pivotal concept in the analysis, provides further insights into the power dynamics inherent to the auction and the occurrence of a paradigm shift. In particular, Dickie's relevance for this analysis lies in his argumentation regarding how the "status of art" is de facto determined by an authoritative voice.²² In "Defining AI Arts: Three Proposals," Manovich, representing a present voice in the debate, contributes to the definition of AI art, also referring to the notions of authorship and creativity.²³ Specifically, after having argued for the absence of a universal definition of art, Manovich states that in the making of AI art, human influence is predominant, and it's the degree of control humans exercise over the algorithmic process that truly characterizes it.²⁴ Moreover, Manovich proposes an understanding of

¹⁷ Kuhn, *The Structure of Scientific Revolutions*.

¹⁸ Gopesh Anand, Eric C. Larson, and Joseph T. Mahoney, "Thomas Kuhn on Paradigms," *Production and Operations Management* 29, no. 7 (2020): 1650, <https://doi.org/10.1111/poms.13188>.

¹⁹ *Ibid.*, 1652.

²⁰ Robert Scott Root-Bernstein, "On Paradigms and Revolutions in Science and Art: The Challenge of Interpretation," *Art Journal* 44, no. 2 (June 1984): 109, <https://doi.org/10.1080/00043249.1984.10792532>; *Ibid.*, 111.

²¹ Anand, Larson, and Mahoney, "Thomas Kuhn on Paradigms," 1653.

²² George Dickie, "Defining Art," *American Philosophical Quarterly* 6, no. 3 (1969): 254.

²³ Lev Manovich, "Defining AI Arts: Three Proposals," *AI and Dialog of Cultures Exhibition Catalog* (Saint-Petersburg: Hermitage Museum, 2019), <http://manovich.net/content/04-projects/107-defining-ai-arts-three-proposals/manovich.defining-ai-arts.2019.pdf>.

²⁴ *Ibid.*, 2; *Ibid.*, 5.

creativity that exceeds human comprehension.²⁵ Alongside Manovich, Media and Communication Professor Robin Mansell analyzes the concepts of authorship and originality in her article “Enclosing or Democratizing the AI Artwork World,” relating them to a legal and ethical framework, and underlining the need for redesigning and adjusting intellectual property (IP) laws following this technological advancement.²⁶ Here, Deepak Somaya and Lav R. Varshney’s work “Ownership Dilemmas in an Age of CREATIVE MACHINES” will be referenced to aid the comprehension of the mechanism of this legal framework.²⁷ Nevertheless, the answer to the second sub-question is primarily supported by Goenaga's work "A Critique of Contemporary Artificial Intelligence Art: Who is Edmond de Belamy?" as he emerges as a significant contributor by examining how the auction prompts inquiries into "authorship, originality, and the arts as a space for scientific inquiry," with a focus on the process of creation.²⁸

The exploration of the second sub-question, touching upon the above-mentioned authors, will proceed simultaneously with the investigation of the third sub-question, which examines the paradigm shift triggered by the sale of a selection from Muybridge’s series (Figure 2) in the first American all-photographs auction in 1952, and the subsequent evolution of the concepts under scrutiny during that point in history.²⁹ This comparative analysis will provide additional evidence supporting the paradigm shift associated with the auction of *Edmond de Belamy*, as well as highlighting Christie’s influential role in heading this transition.

²⁵ Ibid., 8.

²⁶ Robin Mansell, “Enclosing or Democratizing the AI Artwork World,” *Cambridge Journal of Law, Politics, and Art* 1 (2021): 4; Ibid., 7.

²⁷ Deepak Somaya and Lav R. Varshney, “Ownership Dilemmas in an Age of CREATIVE MACHINES,” *Issues in Science and Technology* 36, no. 2 (2020): 79–85.

²⁸ Goenaga, “A Critique of Contemporary Artificial Intelligence Art,” 51-52.

²⁹ “The First Auction of Photographs in the United States,” Swann Galleries News (blog), February 24, 2016, <https://www.swanngallery.com/news/photographs-and-photobooks/2016/02/evolution-photo-catalogues-swann/>.

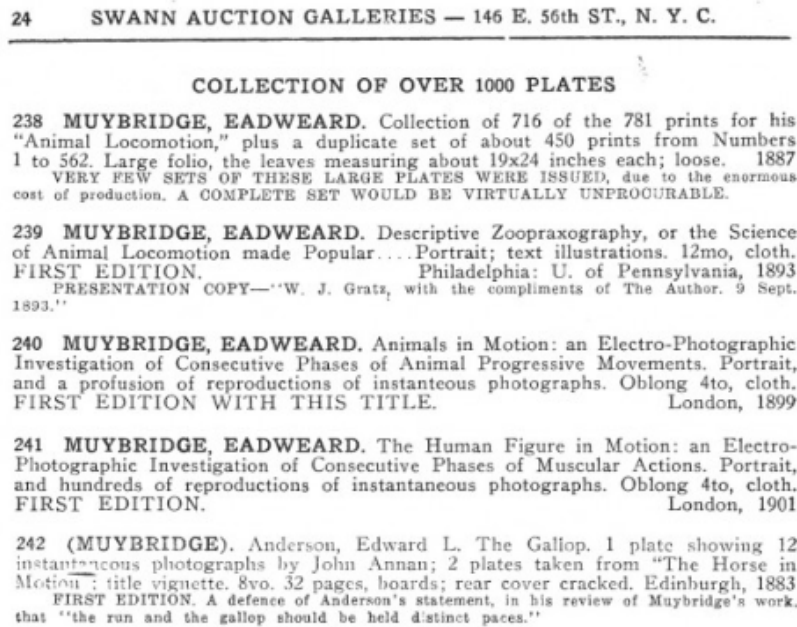


Figure 2: Screenshot from Swann Galleries website of the interior of the auction catalog from the auction held on February 14, 1952, specifically from page 24.

Walter Benjamin will be a key author for addressing the third sub-question and analyzing the concepts applied to Muybridge's *Animal Locomotion*. In particular, Heinz Puppe emphasized Benjamin's contention that changes in perception of art and photography are to be linked to "supra-structures" of society, and the importance of considering cultural and economic conditions in paradigmatic changes.³⁰ Hence, Benjamin and Puppe will be employed to establish parallels with Dickie and Kuhn's theories within the realm of photography. Moreover, Benjamin's conception of "aura" will be central in guiding the discussion on the evolution of the conception of creativity.³¹ Alongside Benjamin, important considerations regarding this concept have been addressed by Vincent Tomas in "Creativity in Art."³² In particular, Tomas' article will be employed to introduce one of the main associations linked to the term, thereby providing a way to approach its significance and better identify its evolution, while Andrés Hispano will offer valuable insights to address the context that facilitated Muybridge's work to be recognized as creative.³³

Furthermore, Mansell's work is key to illustrating the connections between authorship, creativity, and value creation, ultimately guiding us toward the answer to the final sub-question. On

³⁰ Heinz W. Puppe, "Walter Benjamin on Photography," *Colloquia Germanica* 12, no. 3 (1979): 274.

³¹ Walter Benjamin, Hannah Arendt, and Harry Zohn, *Illuminations*, 1st Schocken paperback ed (New York: Schocken Books, 1969), 221.

³² Vincent Tomas, "Creativity in Art," *The Philosophical Review* 67, no. 1 (1958): 1–15, <https://doi.org/10.2307/2182766>.

³³ Andrés Hispano, "Trusting the Images. Science, Photography and the World at Hand," *Comparative Cinema* 6, no. 11 (2018): 45–55.

this matter, Professor Ünsal Özdilek's theories will be employed to pinpoint the interdisciplinary nature of the scope of analysis, highlighting how substantial research concerning the term is found in the field of Economics, for example in the notions of "price, cost, and income (PCI)."³⁴ Along Özdilek, the answer to the fourth sub-question identifies Jeffrey Pompe as a key author: his analysis of photography auction data permits drawing parallels on how major auctions influence the rise and the overall trajectory of a new medium, and how from 2018 AI can be finally asserted as an artistic medium.³⁵

Method

The chosen methodology for examining the paradigm shift brought about by Christie's auction of *Edmond de Belamy* and Christie's role in this shift is media archeology as intended by Jussi Parikka in *What Is Media Archeology*.³⁶ Parikka defines media archeology as a way to explore new media cultures drawing insights from the past to comprehend both present and future.³⁷ In this process, Bolter and Grusin's theory on 'remediation' is said to be pertinent, elucidating how features of older media are incorporated into digital media, thereby highlighting the intricate temporal relationship.³⁸ Parikka references two primary figures in the development of media archeology: Michel Foucault and Friederich. A. Kittler.³⁹ The former figure emphasizes it as a "methodology for excavating conditions of existence" of a media, while the latter, building on the discourse of the former, stresses the connection of these conditions to media networks and scientific discoveries.⁴⁰ Therefore, applying media archaeology to compare the key notions of this analysis, in relation to *Edmond de Belamy* and the first photographic auction of 1952 by Swann Galleries in New York, featuring Eadweard Muybridge's *Animal Locomotion* series, allows for an exploration of the broader connections between older and newer media forms within a cyclical temporality where past, present, and future are interconnected.⁴¹ Moreover, this methodology implies the examination of power dynamics and aligns with the following analysis in its aim to examine the paradigm shift brought by AI, alongside the photographic shift, to address auctions in their institutional authoritarian role.⁴²

³⁴ Ünsal Özdilek, "Art Value Creation and Destruction," *Integrative Psychological & Behavioral Science* 57, no. 3 (September 2023): 796, <https://doi.org/10.1007/s12124-022-09748-7>.

³⁵ Jeffrey Pompe, "An Investment Flash: The Rate of Return for Photographs," *Southern Economic Journal* 63, no. 2 (1996): 488–95, <https://doi.org/10.2307/1061182>.

³⁶ Jussi Parikka, *What Is Media Archeology*, Repr (Cambridge: Polity Press, 2015).

³⁷ *Ibid.*, 2.

³⁸ *Ibid.*, 3; Jay David Bolter and Richard Grusin, *Remediation Understanding New Media* (Cambridge (Mass.); London: MIT Press, 2000), 55.

³⁹ Parikka, *What Is Media Archeology*, 6.

⁴⁰ *Ibid.*

⁴¹ *Ibid.*, 14.

⁴² *Ibid.*, 5.

In regard to the objects of analysis, the choice to refer to the first all-photographs Swann Galleries' auction from 1952 required a personal selection. I opted for an auction in the American context, specifically in New York, mirroring the setting of my primary case study, as the first-ever photographic auction remains a subject of debate. I encountered some difficulties in my selection process as sources contradicted one another. For example, Christie's official website implies that photography gained recognition as fine art only when Christie's inaugural photographic auction on December 14th, 1972, in London took place.⁴³ Nevertheless, my decision has been mostly influenced by the items showcased in the auction. Therefore, the 1952 auction was chosen for comparison with Obvious' work not only because this auction is referenced as a noteworthy postwar historical event, but also because of the presence of Muybridge's work, which profoundly transformed the aesthetics of photography since the introduction of the daguerreotype.⁴⁴ This parallels the availability of GAN technology before its auction, highlighting a similar timeline of technological advancement. Last, a comparison based on the trajectory of the photographic boom, provided by Pompe, a researcher in the field of Economics, will be part of the interdisciplinary understanding of auctions' impact on value creation in the art world.⁴⁵

To sum up, the following analysis will offer insights from different scholarly disciplines, mostly art history, philosophy, and media studies, to provide a comprehensive understanding of the transformative nature of the auction of an AI portrait in the current artistic landscape, as well as linking it, more generally, to the political economy. Ultimately, the comparison with photography further presents a way to contextualize Christie's auction in the historical progression of paradigm shifts following technological advancements.

⁴³ "50 Years of Photographs Sales at Christie's," accessed April 1, 2024, <https://www.christies.com/stories/fivedecades-of-photographs-sales-at-christies-3a5d8821742e44e19491e069c5bed3ab>.

⁴⁴ Caroline H. Backlund, "The Cutting Edge: New Auction Sources and Computer Projects," *Journal of the Art Libraries Society of North America* 9, no. 4 (December 1990): 177, <https://doi.org/10.1086/adx.9.4.27948269>; Marta Braun, *Eadweard Muybridge* (London, United Kingdom: Reaktion Books, Limited, 2010), 7, <http://ebookcentral.proquest.com/lib/uunl/detail.action?docID=850989>

⁴⁵ Pompe, "An Investment Flash: The Rate of Return for Photographs."

Analysis

Paradigm Shifts and *Edmond de Belamy's* Impact

In *The Structure of Scientific Revolutions*, Thomas Kuhn, who is credited with having coined the term “paradigm shift,” evaluates the role of paradigms within historical contexts.⁴⁶ Robert Root-Bernstein, a former student of Kuhn, who further described himself as “a scientist and an amateur artist,” is mentioned within the scope of this analysis for his dissent against his mentor’s proposition.⁴⁷ Specifically, he opposed the conception of paradigm shifts as confined to the domain of science.⁴⁸ Differently, Root-Bernstein asserted the similarity between the artistic and scientific domains.⁴⁹ In “On Paradigms and Revolutions in Science and Art: The Challenge of Interpretation,” Root-Bernstein reached his conclusions also by referring to authors such as E.M. Hafner.⁵⁰ In particular, Root-Bernstein referenced Hafner's proposal, highlighting similarities between the historical trajectories of science and art suggesting the possibility of paradigmatic revolutions within the artistic domain.⁵¹ Root-Bernstein recognized how Hafner’s proposal was contested by Kuhn, who situated himself on the opposing side of the argument when asked to comment.⁵² Still, he explained that “scientific chauvinism,” (i.e. believing that science has a claim to knowledge or ‘truth value’) might have been the main cause of such positioning.⁵³ In fact, admitting the similarities between the two disciplines would have entailed admitting that art also held significance as a form of “knowledge or truth,” which represented a countercultural thought at that time.⁵⁴

Nevertheless, in his article, Root-Bernstein also emphasized how Kuhn himself did not intend to limit the understanding of paradigms as disruptive.⁵⁵ However, Kuhn is noted to have contradicted himself by stating how “once a paradigm is abandoned, it is abandoned forever.”⁵⁶ Hence, Root-Bernstein found in this very contradiction the requisite substantiation for his thesis. In particular, he extended the concept of paradigm shift into the realm of art history, aligning with Kuhn’s understanding of paradigm shifts wherein the old and new knowledge coexisted.⁵⁷ To further prove this point, amongst the arguments presented to support his argument, Root-Bernstein further referenced

⁴⁶ Kuhn, *The Structure of Scientific Revolutions*; Root-Bernstein, “On Paradigms and Revolutions in Science and Art,” 109; Anand, Larson, and Mahoney, “Thomas Kuhn on Paradigms,” 1650.

⁴⁷ Root-Bernstein, “On Paradigms and Revolutions in Science and Art,” 109.

⁴⁸ *Ibid.*

⁴⁹ *Ibid.*

⁵⁰ *Ibid.*

⁵¹ *Ibid.*

⁵² *Ibid.*

⁵³ *Ibid.*

⁵⁴ *Ibid.*

⁵⁵ *Ibid.*, 110.

⁵⁶ *Ibid.*

⁵⁷ *Ibid.*

Ernst Gombrich's discussion on the cumulative nature of art.⁵⁸ Gombrich elucidated how successive generations build upon preceding knowledge, undergoing modifications that distinguish them from their predecessors.⁵⁹ However, Gombrich seemed to align with Kuhn regarding whether art and science adhered to analogous criteria of 'correctness,' but is noteworthy to mention that Gombrich, differently, did draw comparisons between similar objects, correlating science to 'technical art.'⁶⁰ Additionally, Root-Bernstein referred to Feyerabend's contention that "scientific theories are never true," as they merely approximate reality and enable predictions about the world.⁶¹ This perspective dismantled the illusion of supreme objectivity surrounding the sciences, which sought to reinforce differences with the artistic domains.⁶² Finally, Root-Bernstein contended that artists, like scientists, adopt the paradigms established by their predecessors through imitation and recreation, drawing from established traditions: "art destroys its past as much as science does, which is to say very little."⁶³ Hence, although Root-Bernstein primarily emphasized the cumulative rather than the revolutionary aspect of paradigms, the author extended the conception of paradigm shifts to the history of art.⁶⁴

Therefore, following Root-Bernstein's argumentation on the applicability of the paradigm shift concept to art history, I believe its extension to the first auction of an AI-generated portrait (*Edmond de Belamy*) as a historical event is justified. Computer scientists such as Alexis Newton, Kaustubh Dhole, and Hertzmann already emphasize the revolutionary aspect of this technology, specifically drawing a connection with revolutions in the scientific domain.⁶⁵ However, following Root-Bernstein, I'm not particularly interested in referring to the revolutionary aspect of it, but rather focus on the evolutionary change in the understanding of particular notions related to value in the arts.

(Re-) Defining Art

The discussion around paradigm shifts leads to a reevaluation of particular notions within the realm of art, while also leading to question the elements that can be included within it. Consequently, before delving into how the concepts of authorship and creativity have changed since the auction, the initial focus of analysis pertains to the general conception of art.

⁵⁸ Ibid., 111.

⁵⁹ Ibid.

⁶⁰ Ibid., 113.

⁶¹ Ibid.

⁶² Ibid., 109.

⁶³ Ibid., 116.

⁶⁴ Ibid., 117.

⁶⁵ Alexis Newton and Kaustubh Dhole, "Is AI Art Another Industrial Revolution in the Making?" arXiv, January 12, 2023, <http://arxiv.org/abs/2301.05133>; Aaron Hertzmann, "Can Computers Create Art?" *Arts* 7, no. 2 (June 2018): 1-25, <https://doi.org/10.3390/arts7020018>.

According to Manovich, there is a lack of consensus on the definition of art, leading to an ambiguous understanding of what falls within its boundaries.⁶⁶ Manovich states that art is defined as such only when examined within its evolutionary context to the present moment of analysis.⁶⁷ By addressing that art lacks a singular common definition and that it can only be defined through the lens of its evolution, Manovich seems to refer to the arguments (and counterarguments) of two key authors within the American cultural landscape of the 1960s, a philosopher and an art critic, namely George Dickie and Arthur Danto. These references are particularly interesting as when Dickie and Danto published their works, although not specifically relating them to the field of AI, AI's first approaches to art had already been circulating for a decade.⁶⁸

In "Defining Art," George Dickie assumed "artificiality" as the characteristic common to every work of art together with the so-called "social property."⁶⁹ To develop this proposition, Dickie himself referred to Danto's article titled "The Artworld," including his conception of the "artworld," defined as "an atmosphere of artistic theory, a knowledge of the history of art."⁷⁰ Specifically, Dickie stated how a work of art, understood in a descriptive sense, corresponds to "an artifact upon which some society or some sub-group of a society has conferred the status of candidate for appreciation."⁷¹ Furthermore, Dickie established a connection between Danto's conception of the "artworld," and his own conception of the "status of appreciation:" Danto's "artworld" turned into the system that allowed the artifact to acquire the "status of a candidate for appreciation."⁷² Here, Dickie's conception of "appreciation" was intended as the "experiencing qualities of a thing one finds [...] worthy or valuable."⁷³ Therefore, Dickie underlined how appreciation in these terms did not serve to distinguish works of art from artifacts, but rather to emphasize the "status of the candidate," (a key step in the process of value creation).⁷⁴ In particular, this status was said to be conferred by some authority which is not explicitly mentioned, although the author highlighted how certain known institutional contexts wield more influence than others.⁷⁵ Hence, artifacts become works of art in the moment that this status is conferred to them.⁷⁶

Furthermore, Dickie overall argument seems to be in contrast with Manovich's orientation to the "imitation definition," which tries to explicate how every work of art is an imitation of something

⁶⁶ Manovich, "Defining AI Arts," 2.

⁶⁷ Ibid.

⁶⁸ Ibid.

⁶⁹ Dickie, "Defining Art," 253.

⁷⁰ Ibid., 254.

⁷¹ Ibid.

⁷² Ibid.

⁷³ Ibid., 255.

⁷⁴ Ibid.

⁷⁵ Ibid.

⁷⁶ Ibid.

else, drawing connections with past artifacts.⁷⁷ Dickie believed that the status of art was not determined by an evolutionary process, navigable through the analysis of the history of art, but rather by an authoritative voice that confers such status upon it. Moreover, this authoritative voice seems to correspond to what Kuhn refers to as the voice of the “scientific community” which evaluates and allows the change in paradigm after the moment of crisis.⁷⁸

Hence, while the present debate faces skepticism regarding the recognition of AI-generated art as an artistic form, following Dickie's argumentation, artifacts generated through AI technology can qualify as works of art.⁷⁹ Notably, this assertion results pertinent due to Christie's authoritative position in the art world. Therefore, Christie's decision to exhibit the AI-generated portrait underscores its influence, prompting an evolution in the definition of art to accommodate such a decision.

Consequently, the examination of the concepts of authorship and creativity in relation to *Edmond de Belamy* implies the auction's role in catalyzing this transformation. However, auctions serving as catalysts for paradigm shifts that redefine the boundaries of art is not a new phenomenon. Similarly, photography gained full acceptance as an artistic medium, facilitated by auctions such as Swann Galleries' auction in 1952. As for the case of AI tools for image generation, photography initially faced skepticism, as exemplified by Charles Baudelaire's assertion that “[photography] has supplanted or corrupted art altogether.”⁸⁰ This can be further evidenced by the fact that approximately a century after the introduction of the daguerreotype in 1839, debates regarding the status of photography persisted.⁸¹

A key author, who contributed extensive material to the discourse on photography, can be found in Walter Benjamin, a German philosopher renowned for his writings on the subject and its history.⁸² According to Puppe, Benjamin recognized before everyone else that photography would be inserted in the realm of fine arts, referring to the “photographic Schmock” of his time, which is the rapid proliferation of photographic auctions.⁸³ In line with this, Benjamin argued that the perception of art is a superstructure influenced by shifts in the underlying societal infrastructure.⁸⁴ He also acknowledged the political dimension of art (e.g. the ‘aesthetization of politics’ by fascists), although he did not explicitly reference other than political institutions unlike theorists such as Dickie and Danto.⁸⁵ Moreover, Benjamin contended the increasing importance of the “exhibition value” of

⁷⁷ Ibid., 256.

⁷⁸ Anand, Larson, and Mahoney, “Thomas Kuhn on Paradigms,” 1653.

⁷⁹ Hertzmann, “Can Computers Create Art?,” 1.

⁸⁰ C. Blaine Horton, Michael W. White, and Sheena S. Iyengar, “Will AI Art Devalue Human Creativity?,” 2023, 9, <https://www.researchsquare.com/article/rs-2987022/latest>.

⁸¹ Puppe, “Walter Benjamin on Photography,” 275.

⁸² Ibid., 274.

⁸³ Ibid., 289.

⁸⁴ Ibid., 274; Ibid., 279.

⁸⁵ Ibid., 280.

photography (e.g. it can be related to auctions in the context of propaganda), as opposed to the “cult value” of art: he focused on how technology had driven a change in perception (and, by extension, definition) of art.⁸⁶ Finally, as suggested by Puppe reflecting on Benjamin’s theories, the influential role of society in designating and (re-)defining something as art, with auctions serving as implicit judges in this process (“art industry has appropriated photography as art”).⁸⁷

(Re-) Defining Authorship

The concept of authorship entails “the source of a piece [...] of art,” hence it addresses who is to be considered the artist.⁸⁸ The auction of *Edmond de Belamy* raised a critical debate about whether and how humans are involved in this process. Among the authors who addressed this inquiry, Manovich articulated how human influence is predominant in making AI art.⁸⁹ To underscore this argument, Manovich pointed out how human decisions involve at least three stages: designing or choosing a network architecture and algorithm, creating the training set, and selecting the outcome.⁹⁰ Differently, in “A Critique of Contemporary Artificial Intelligence: Who Is Edmond de Belamy?” Goenaga, reflecting on the auction, highlights how AI-generated artifacts, by “doing the thinking and creating for us,” seem to diverge from Duchamp’s conception of authorship which positions the artist at the center of the artwork’s creation, and Manovich’s belief of the predominance of human influence.⁹¹ However, Goenaga also addressed how for the time being, existing technologies cannot function as “autonomous artificial artists,” and cannot completely exclude humans from the creation process.⁹²

In regards to the results of this process, the notion of authorship extends to the issue of ownership and intellectual property rights, which is significantly relevant in the context of the auction of *Edmond de Belamy* since it was created using an open-source software, without any acknowledgment of the software’s creator.⁹³ In “Enclosing or Democratizing the AI Artwork World,” Mansell discusses the need for redesigning and adjusting intellectual property laws following the commodification of AI-generated pictures (e.g. via auctions) to establish who should benefit from the labor involved between the AI system, “the artist practitioner, the technologist, the creator, or [...] the

⁸⁶ Benjamin, Arendt, and Zohn, *Illuminations*, 225; Puppe, “Walter Benjamin on Photography,” 280.

⁸⁷ Puppe, “Walter Benjamin on Photography,” 289.

⁸⁸ “Authorship Definition & Meaning - Merriam-Webster,” accessed June 9, 2024, <https://www.merriam-webster.com/dictionary/authorship>.

⁸⁹ Manovich, “Defining AI Arts,” 5.

⁹⁰ Ibid.

⁹¹ Goenaga, “A Critique of Contemporary Artificial Intelligence Art,” 52.

⁹² Ibid., 60.

⁹³ Schneider and Rea, “Has Artificial Intelligence Given Us the Next Great Art Movement?,” Somaya and Varshney, “Ownership Dilemmas in an Age of CREATIVE MACHINES,” 79.

users of digital art platforms who generate data used to create artworks valuations.”⁹⁴ Consequently, the struggle of the patent system to address all of these entities is also based on the fact that current intellectual property (IP) laws only recognize human creators.⁹⁵ However, it is relevant to underline how the very absence of well-defined authorship regulations for AI-generated works allowed Christie’s to showcase Obvious’ work (generated with the help of Barrat’s algorithm) without any mention of Barrat or legal repercussions.

Moreover, showcasing *Edmond de Belamy*, Christie’s proposed a new way of conceptualizing authorship (and ownership), recognizing the role of machine intervention rather than human intervention. In fact, Richard Lloyd, Christie’s head of prints and multiples, defended the decision to exhibit Obvious’ work by highlighting the minimal human involvement in its creation.⁹⁶ Consequently, the attribution of authorship in *Edmond de Belamy* as intended by Christie’s is to be assigned primarily to the algorithm. Hence, the auction marked a paradigm shift in the assessment of authorship, transitioning from humans to machines (although the implementation of new IP regulations did not yet parallel this shift).⁹⁷

The debate on the conception of authorship and Christie’s auction of *Edmond de Belamy* very much resembled the one that emerged with the introduction of photography. The main criticism photography initially faced addressed the absence of men, being replaced by the photographic medium.⁹⁸ Specifically, as artists were thought to be entities inspired by “muses, or by some other well-meaning divinity,” the new apparatus dismantled this characteristic of the cult of high art.⁹⁹ Critics found photography blasphemous as it challenged the notion that only an inspired artist, elevated to supreme status, could accurately “portray the divine likeness of humanity” (connected to the cult value of art, as mentioned earlier).¹⁰⁰

Moreover, as for the case of AI art, in the realm of photography, the issue of authorship and ownership was a subject of debate, as illustrated by a legal case involving the photographic portrait factory of Mayer and Pierson.¹⁰¹ Notably, the owners sued their rivals seeking compensation for damages, alleging piracy and mass-marketing of some of their portraits.¹⁰² The court ruled in favor of Mayer and Pierson, marking a significant advancement in both the recognition of photography as art,

⁹⁴ Mansell, “Enclosing or Democratizing the AI Artwork World,” 7; *Ibid.*, 4-5.

⁹⁵ Somaya and Varshney, “Ownership Dilemmas in an Age of Creative Machines,” 80.

⁹⁶ Schneider and Rea, “Has Artificial Intelligence Given Us the Next Great Art Movement?”

⁹⁷ Somaya and Varshney, “Ownership Dilemmas in an Age of Creative Machines,” 79.

⁹⁸ André Bazin and Hugh Gray, “The Ontology of the Photographic Image,” *Film Quarterly* 13, no. 4 (1960): 7, <https://doi.org/10.2307/1210183>.

⁹⁹ Puppe, “Walter Benjamin on Photography,” 274.

¹⁰⁰ *Ibid.*

¹⁰¹ *Ibid.*, 276.

¹⁰² *Ibid.*

and the recognition of authorship and ownership over photographs.¹⁰³ Specifically, the court recognized that while photography relied on apparatus, the imprint of the photographer's personality was also influential, blending with the inquiry around the conception of creativity and the value creation.¹⁰⁴ Factors such as the point of view, lighting, poses, and attire were recognized to necessitate human intervention in the creative process.¹⁰⁵ However, the main argument that led to this victory asserted that mimesis had long been a prominent principle in art, and photography excelling in this aspect, aligned with established tradition.¹⁰⁶

Nevertheless, Andres Hispano pointed out that the 19th century witnessed a "crisis of sight," characterized by discrepancies between photographic images and human perception, rendering mimesis insufficient to justify the use of the photographic medium.¹⁰⁷ Photography managed to survive this moment of crisis thanks to photographers such as Muybridge. With his *Animal Locomotion* series, Muybridge pioneered a novel technique of photographic reproduction, one which was able to portray movement and time alongside, surpassing what could be discerned with the naked eye.¹⁰⁸ Therefore, the photographic auction held at Swann Galleries on February 14th, 1952, not only marked the inaugural all-photographs auction in America, but most importantly, by including Muybridge's work, it displayed a new understanding of authorship and creativity: mimesis was no longer the aim of the artist, and humans and machines could work alongside to create what came to be finally considered art, both being authors in this process.

(Re-) Defining Creativity

Creativity in literature has mostly been addressed in reference to the artist's product's novelty, although mimesis, as discussed in the earlier section, has been a constant in the aesthetics of artworks since Aristotle.¹⁰⁹ In his article "Creativity in Art," philosopher Vincent Tomas addresses how "to create is to originate," underlining that anything resulting as a repetition of something else is denied its creativity aspect.¹¹⁰ However, the term creativity is also said to be employed in an "honorific sense," rejecting novelty as the sole factor influencing the assessment of the creative component of a work.¹¹¹ According to Tomas, the artist's control over the artistic process from which the work originates (e.g. including variables referenced earlier related to Mayer and Pierson's case), is factored

¹⁰³ Ibid.

¹⁰⁴ Ibid., 277.

¹⁰⁵ Ibid.

¹⁰⁶ Ibid., 278.

¹⁰⁷ Hispano, "Trusting the Images. Science, Photography and the World at Hand," 46.

¹⁰⁸ Braun, *Eadweard Muybridge*, 10.

¹⁰⁹ Puppe, "Walter Benjamin on Photography," 278.

¹¹⁰ Tomas, "Creativity in Art," 3-4.

¹¹¹ Ibid., 7.

in when distinguishing creative works from not creative ones, intersecting with the matter of authorship: authorship influences the assessment of creativity.¹¹²

Parallel to the inquiry around authorship, Goenaga posits how a neural network can never distance itself from the data it operates on, so cannot produce an image that completely originates something novel, altering our understanding of aesthetics.¹¹³ Hence, the scholar distances himself from the conception of creativity as intended by Tomas. Moreover, citing the woman identified as the first programmer in history (already in 1843), British mathematician Ada Lovelace, Goenaga wrote how ‘only when computers originate things should they be believed to have minds.’¹¹⁴ Nevertheless, when talking about *Edmond de Belamy*, Goenaga contends that AI-generated artworks can be considered creative even if *Edmond de Belamy* resembles something Rembrandt might have produced.¹¹⁵ Moreover, creating artifacts that see a human-machine interaction represents the "ultimate frontier" of creativity, referencing the Wagnerian concept of ‘Gesamtkunstwerk.’¹¹⁶ In particular, this concept proposes a “multisensory immersion,” which is, according to Wagner, the ultimate way to experience an artwork.¹¹⁷ In line with Wagner’s notion, machines function as collaborators and extensions of human capabilities, resulting in a richly multisensory outcome from the combination of human and machine contributions.¹¹⁸ Hence, like Tomas, Goenaga identifies the artist's control over the creation process as a creativity factor, while also acknowledging machines’ input.¹¹⁹

Consequently, while Christie’s tries to hide the human input in the artwork, the debates around the concept of creativity that emerged after the auction do not stand without reference to the artists’ collective and their input. Moreover, Goenaga contends how the debate about whether or not AI art can be thought of as creative reflects human hesitance to address machines as creative entities because of the “moral, ethical, and social implications” it would bring into question, as for the same matter of authorship.¹²⁰ In fact, as for the same case of the legal understanding of authorship, IP laws reflect traditional beliefs about the intrinsic human nature of creativity which contrast with the conception of machine creativity.¹²¹ Mansell specifies how in the case of AI art, it is challenging to trace where the human is noticeably involved in the outcome.¹²² Nevertheless, Mansell proposes alternative views in the present debate, referencing authors such as Boden, who acknowledges and

¹¹² Ibid., 5.

¹¹³ Goenaga, “A Critique of Contemporary Artificial Intelligence Art,” 59.

¹¹⁴ Ibid.

¹¹⁵ Ibid., 52.

¹¹⁶ Ibid., 56.

¹¹⁷ Ibid.

¹¹⁸ Ibid.

¹¹⁹ Ibid., 60.

¹²⁰ Ibid., 58.

¹²¹ Somaya and Varshney, “Ownership Dilemmas in an Age of CREATIVE MACHINES,” 79.

¹²² Mansell, “Enclosing or Democratizing the AI Artwork World,” 8.

distinguishes types of AI creativity (between combinatorial, exploratory, and transformational), allowing the term to be correlated to a non-human agent.¹²³

Hence, Boden's perspective is in line with Christie's new understanding of creativity introduced through the auction. In particular, when talking about *Edmond de Belamy*, Lloyd further mentioned how 'Obvious aimed to minimize human intervention to ensure that the resulting artwork reflects the purest form of creativity expressed by the machine.'¹²⁴ However, this is in contrast with Obvious' own thoughts on creativity. Being interviewed about *Edmond de Belamy*, Obvious, stated how creativity is to be seen in the human presence of the work.¹²⁵ Moreover, the artists' collective differentiates creativity from the inventive character of the work (the subject that originates novelty) which they attributed to GANs.¹²⁶ Hence, Obvious gave a new understanding of creativity through *Edmond de Belamy*: creative is the human that chooses the dataset, and inventive is the machine learning system, dividing what has been traditionally intended to belong solely to the human agent.¹²⁷ Furthermore, according to Obvious, creativity follows "aesthetic principles extracted from existing art," in line with Goenaga's positioning on creativity as well as with the more broad mimetic tradition.¹²⁸

Conversely, Christie seems to have distorted the understanding of creativity proposed by Obvious, to guide the understanding of creativity, as well as authorship, bound to the machine: a paradigm shift in the way AI is addressed as a creative agent. Although the presence of humans cannot yet be completely erased in the process of creation as explained by the same artists' collective, and partially by Christie's, this auction house is guiding the artistic landscape toward a new direction.¹²⁹ Hence, the sale seems to represent a turning point regarding computational creativity, (most probably) aiding the (in progress) formation of new IP laws to accommodate this new art form.

Finally, as previously mentioned, the change in the conception of authorship brought by the new photographic auction displaying Muybridge's *Animal Locomotion* is linked to the change in the conception of creativity/originality. Although probably having had contact with Muybridge's works, Benjamin argued against the possibility of creativity related to products of the photographic medium. Specifically, Benjamin argued that mimesis does not compromise the "aura" of a work of art, the unique presence "in time and space [...] determined by the history of a piece of art" (its creative

¹²³ Ibid., 6.

¹²⁴ Schneider and Rea, "Has Artificial Intelligence Given Us the Next Great Art Movement?"

¹²⁵ "Creativity Remains Human," Arterritory.com, accessed May 19, 2024, https://artterritory.com/en/visual_arts/interviews/25537-creativity_remains_human/.

¹²⁶ Ibid.

¹²⁷ Ibid.

¹²⁸ "The First Piece of AI-Generated Art to Come to Auction," accessed May 20, 2024, <https://www.christies.com/stories/a-collaboration-between-two-artists-one-human-one-a-machine-0cd01f4e232f4279a525a446d60d4cd1>.

¹²⁹ "Creativity Remains Human."

character).¹³⁰ According to Benjamin, mechanical reproduction is the causal agent that diminishes the aura, transforming into a product for the masses what had been previously intended as a product for the elites.¹³¹ More specifically, he referred to a change in the artistic aim: creativity was no longer the focus of art, but rather propaganda.¹³² However, it is to be considered that when expressing such a perspective, Benjamin was very much influenced by the time and by the emerging totalitarian regimes in Europe.¹³³ Nevertheless, Muybridge's *Animal Locomotion* is deemed creative, aligning with the paradigm shift taking place in the photographic era, also given the interconnected understanding of authorship and creativity. This shift was facilitated by the influential role of Swann Galleries in showcasing Muybridge's work, ultimately affirming photography as an artistic medium and presenting a new way to assess creativity (distinct from Benjamin's viewpoint).

(Re-) Defining Value

Aligned with the idea of regulating authorship and creativity between technology and humans is the matter of best assessing the works' value, which is also said to aid in generating incentives for the development of computational creativity, supporting Christie's new understanding of AI as both authoring and creative entity.¹³⁴

Value, such as for the other concepts analyzed in this analysis, does not present a common definition.¹³⁵ Özdilek emphasizes how value encompasses different meanings across different disciplines, and how, for example, in Economics value is mostly understood through the price, cost, and income (PCI) framework.¹³⁶ However, the author also references other disciplines, pointing at how the aesthetic appreciation of art, mostly studied in the fields of psychology and neurology, involves a different system of measurement.¹³⁷

Özdilek proposes an understanding of value influenced by two opposing forces: creation and destruction.¹³⁸ Value creation is linked to the moment of "aesthetic appreciation," whereas value destruction, observed within the economic sphere, pertains to declines in "PCI levels or market crashes."¹³⁹ In particular, he asserts how value is to be located in the degree of uncertainty associated with the outcome, which keeps its state in existence as well as its attractiveness.¹⁴⁰ Hence, spectators'

¹³⁰ Benjamin, Arendt, and Zohn, *Illuminations*, 220.

¹³¹ Puppe, "Walter Benjamin on Photography," 281.

¹³² Benjamin, Arendt, and Zohn, *Illuminations*, 225.

¹³³ Puppe, "Walter Benjamin on Photography," 273.

¹³⁴ Somaya and Varshney, "Ownership Dilemmas in an Age of CREATIVE MACHINES," 84.

¹³⁵ Özdilek, "Art Value Creation and Destruction," 796-7.

¹³⁶ *Ibid.*, 796.

¹³⁷ *Ibid.*, 798.

¹³⁸ *Ibid.*, 799.

¹³⁹ *Ibid.*, 798.

¹⁴⁰ *Ibid.*, 801.

expectations (e.g. during an auction regarding the content displayed) are said to be factored into the understanding of the value state of an artwork.¹⁴¹ Additionally, artists influence the degree of the spectators' expectations by enabling spectators to encounter new information and undergo emotional responses, thereby catalyzing the emergence of novel expectations.¹⁴² Hence, the value of an artwork doesn't cease to exist upon purchase, as information can still vary depending on the previous owner of the same artwork, leading to further changes in expectations.¹⁴³ Consequently, the creation and the destruction phases result situated in the viewers themselves: spectators activate and destroy the value of an artwork by anticipating and subsequently getting access to information about the same artwork.¹⁴⁴ In these terms, Özdilek's understanding of uncertainty as a major factor that influences the value state of an artwork aligns well with the uncertainty of AI-generated *Edmond de Belamy*, and Christie's understanding of machine creativity. Therefore, the final monetary outcome of the auction, which exceeded expectations, can also be attributed to the high degree of uncertainty associated with AI recombination of data.

Finally, having explored the notion of value from a political-economic perspective that emphasizes a balance between economic and non-economic factors to conclude on the value of artworks, we can now examine how auctions influence market dynamics and the emergence of a new medium, further highlighting their authoritative role in transforming the artistic landscape. In the case of photography, Jeffrey Pompe examined how major auction houses began regularly scheduling photographic sales starting in 1975.¹⁴⁵ This move catalyzed a boom in the photographic market during the 1980s, consequently driving up the value of photographs during this period.¹⁴⁶ Similarly, an increase in the number of major auctions selling AI-generated art following Christie's initiative has been attested. For instance, as mentioned earlier, Sotheby's held an auction featuring Mario Klingemann's work following Christie's lead.¹⁴⁷ Furthermore, in 2022 renowned auction houses such as Christie's, Phillips, and (once again) Sotheby's have conducted AI-art sales resulting in big numbers, with Sotheby's April auction reaching \$2.3 million.¹⁴⁸ As seen for the case of photography as analyzed by Pompe, in the case of AI-generated art, the market could witness escalating prices until a decline to then finally stabilize.¹⁴⁹ Therefore, the inclusion of this information further proves a paradigm shift that

¹⁴¹ Ibid., 805.

¹⁴² Ibid., 826-27.

¹⁴³ Ibid., 828.

¹⁴⁴ Ibid., 826-27.

¹⁴⁵ Pompe, "An Investment Flash," 489.

¹⁴⁶ Ibid.

¹⁴⁷ "Artificial Intelligence and the Art of Mario Klingemann," Sothebys.com, February 8, 2019, <https://www.sothebys.com/en/articles/artificial-intelligence-and-the-art-of-mario-klingemann>.

¹⁴⁸ "What Does the Rise of A.I. Models Mean for the Field of Generative Art? NFT Artists and Curators Weigh In," Artnet News, November 25, 2022, <https://news.artnet.com/market/future-of-generative-art-ai-models-erick-calderon-george-bak-dmitri-cherniak-2207167>.

¹⁴⁹ Pompe, "An Investment Flash," 493.

does not completely eradicate previous norms or dictate a new way of business. Instead, it supports the understanding of how major auctions significantly influence the market, even if only temporarily, thus establishing a paradigm shift in the assessment of the economic value of an artwork aligned with the shift in the conceptions of art, authorship, and creativity.

Conclusion

In conclusion, this analysis aimed to explore the role of Christie's (and more in general auctions) in shaping the assessment of certain notions within the artistic realm amidst technological advancements, identified in the historical sale of the first AI-generated portrait *Edmond de Belamy* in 2018. In particular, the sale led to "new perceptions" regarding concepts such as art, authorship, and creativity, and to the overall assessment of art value, raising the contribution of various scholars from different disciplines.¹⁵⁰ To do so, this study applied media archeology, as intended by Jussi Parikka, to unfold four sub-questions, enabling the temporal relationship between the (auctioned) past and present "anomalies" under analysis: AI-generated *Edmond de Belamy* and Muybridge's *Animal Locomotion*.¹⁵¹

Root-Bernstein emerged as a key author in addressing the first sub-question, specifically in elucidating how Kuhn's theory of paradigm shift could be applied to the case of *Edmond de Belamy*. Building on his extension of Kuhn's concept of paradigm shifts to the realm of art, I identified the occurrence of a paradigm shift following the landmark event in the present art scenario. Moreover, auctions were elucidated as pivotal mechanisms in legitimizing new media as art, following Dickie's argument, allowing AI-generated products to be addressed as such. Hence, the paradigm shift regarding the concept of art was found to correspond to the sale of the AI-generated *Edmond de Belamy*.

Furthermore, the answer to the second sub-question was identified in the change in the conception of the notions of authorship and creativity. Linked to the value creation process, these notions were found to have undergone a shift as elucidated by Christie's representative Richard Lloyd, ascribing them to non-human entities and obscuring human involvement. Here, I further identified the discordance between Christie's new understanding and current laws. Moreover, the assessment of authorship and creativity was found to include one another, revealing the interconnectedness of these notions, and demonstrating how the transition of one concept invariably impacts the transition of the other.

¹⁵⁰ Root-Bernstein, "On Paradigms and Revolutions in Science and Art," 109.

¹⁵¹ Anand, Larson, and Mahoney, "Thomas Kuhn on Paradigms," 1652.

The paradigm shift regarding the perception of photography as an art form was addressed concurrently with the response to the second sub-question, in relation to the same notions. In particular, the evolution in the evaluation of authorship and creativity was illustrated by the contributions of Muybridge with his *Animal Locomotion* series, resulting in a transition towards human-machine interaction, and reflecting Wagner's conception of 'Gesamtkunstwerk.'¹⁵² As for the case of *Edmond de Belamy*, the previous demonstration of the interconnectedness between these concepts facilitated an examination (by extension) of how the evolution of these notions unfolded simultaneously in the photographic realm. Additionally, Muybridge's contributions were noted to have enabled photography to navigate through the crisis of sight in the 19th century.¹⁵³ His work transcended mere representation, affording viewers the ability to discern phenomena imperceptible to the naked eye.¹⁵⁴ Here, Swann Galleries represented a vehicle for this novel approach to evaluating creativity and authorship, in addition to affirming photography as art, echoing the authoritative function of auctions observed in the case of Christie's. However, the limitation to demonstrate whether Swann Galleries' auction indeed catalyzed the transformation of the artistic landscape, and if the display of Muybridge's work instigated such a change in that moment of time because of contrasting data regarding photographic auctions. Nevertheless, the deliberate choice to omit reference to a specific photographic auction from the photographic boom that occurred at the end of the 20th century is justified as the 1952 auction represents the first auction exclusively dedicated to photographs in the postwar era, hence another landmark event, mirroring the 2018 auction.¹⁵⁵

In the concluding section, the analysis extended to answering the final sub-question, examining shifts in value creation. In particular, from a political economy perspective, art value is found to be analyzed through the PCI framework as well as being identified in the value destruction phase, in particular in the disclosure of information regarding the work being auctioned.¹⁵⁶ Pompe's auction data assessing the curve of the photographic boom were extended to speculate on the potential trajectory of the AI. Consequently, market data provided a deeper understanding of the nature of this shift and its interconnectedness with the political economy. Specifically, this shift was found not to be characterized by transformative change that breaks ties with the past but rather as a transition that maintains elements from the past (aligning with Root-Bernstein's perspective).

Aligned with this perspective, further research could inquiry into the emergence of any counter-movement following the auction, in particular into new ways of artistic expression that diverge very much from AI-generated art, paralleling how photography was counterbalanced with the

¹⁵² Goenaga, "A Critique of Contemporary Artificial Intelligence Art," 56.

¹⁵³ Hispano, "Trusting the Images. Science, Photography and the World at Hand," 46.

¹⁵⁴ Braun, *Eadweard Muybridge*, 10.

¹⁵⁵ "The First Auction of Photographs in the United States."

¹⁵⁶ Özdilek, "Art Value Creation and Destruction."

emergence of artistic currents such as impressionism and cubism, despite French painter Paul Delaroche declaring ‘from today, painting is dead.’¹⁵⁷ Moreover, the research could be extended to a comprehensive examination of the initiatives to overcome the current legal framework, and consequently the struggle between Christie’s perception of authorship and creativity (addressing non-human creators), and the current laws. Recent observations suggest that digital artworks have experienced a diminution in value, not because of a decrease in the uncertainty factor, but due to their ease of duplication, aligning with Benjamin’s understanding of the loss of aura following the invention of photography.¹⁵⁸ At the present moment, Non-Fungible Tokens (NFTs), “distinct digital asset that gives its owner clear ownership rights,” have been presented as a potential solution in combination with GANs.¹⁵⁹ In particular, NFTs provide artists with a mechanism to tokenize their creations, thereby validating authorship and ownership in the blockchain marketplace.¹⁶⁰ Consequently, the combination of GANs and blockchain technology could facilitate AI’s integration into the digital art market and help substantiate assertions made by Christie’s.¹⁶¹

Finally, in light of this analysis, and the parallels drawn among the trajectories related to the assessment of key notions in the realms of AI and photography, Bolter and Grusin’s conception of new media remediating older media could be combined with Kuhn’s theories and reconceptualized as follows: new media paradigmatic shifts remediate older media’s paradigmatic shifts.¹⁶²

¹⁵⁷ Horton, White, and Iyengar, “Will AI Art Devalue Human Creativity?” 9.

¹⁵⁸ Himanshu Tiwari et al., “Generative AI for NFTs Using GANs,” in *2024 11th International Conference on Computing for Sustainable Global Development (INDIACom)*, 2024, 488, <https://doi.org/10.23919/INDIACom61295.2024.10498251>.

¹⁵⁹ Tiwari et al., “Generative AI for NFTs Using GANs,” 488.

¹⁶⁰ *Ibid*, 489.

¹⁶¹ *Ibid*, 488-489.

¹⁶² Bolter and Grusin, *Remediation Understanding New Media*, 55.

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