

The AI Work of Art in the Age of Its Co-Creation

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Abstract Almost one century after Walter Benjamin's dissertation on the value of the work of art under the impact of its technological reproduction on the roots of globalization and mass media society, the current research aims to provide some coordinates to approach the influence of AI co-creative processes in the artistic field. From a media archaeological approach, we will map the collaborative practices that emerge in the Generative Art landscape to understand the creative possibilities of interaction between humans and machine-driven artistic goals. By conceiving the Web 3.0 as an expansive megadungeon, we find an increasing number of projects based on participative dynamics where online communities join forces with AI decentralized artists to reshape the current state of the art. We will take as an example the Botto Project, a community-driven creator conceived by Mario Klingemann, a pioneer of AI artworks who employs machine learning methods to revolutionize the blockchain and crypto art market. This case study leads us to reconsider the (wo)man-machine co-creation as the base of the auratic experience of the work of art in the age of AI co-creativity.

Keywords Artificial Intelligence (AI). Blockchain. Co-creativity. Decentralized Autonomous Organization (DAO). Generative Art. Machine learning. Postdigital aura. User Generated Content (UGC). Web 3.0.

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1 The Postdigital *Flâneur*: Co-Creation in the Megadungeon

This paper is about looking back and forward: looking back at the roots of the formulation of the cult value of the work of art with the advent of the new technologies - a tribute to Walter Benjamin and those who, as Rosalind Krauss among many others, carried out a mission to update his legacy over the years; looking forward to the Artificial Intelligence (AI) age, where human-machine co-creativity opens a new horizon to redefine the role of the artist herself.

The original essay “Das Kunstwerk im Zeitalter seiner technischen Reproduzierbarkeit” (henceforth, “The Work of Art in the Age of Mechanical Reproduction”) was written by Walter Benjamin from exile in Paris in 1935 and it was published in 1936 under the title “L’œuvre d’art à l’époque de sa reproduction mécanisée” in the *Zeitschrift für Sozialforschung*. Due to its visionary nature, it has been one of the most popular and intensely debated essays in the fields of Humanities and Social Sciences along the twentieth century (Gumbrecht, Marrinan 2003). A milestone and a starting point to develop a media archaeological approach to comprehend the idiosyncrasy of the AI Work of Art in the Age of its Co-Creation.

In the following pages, we will wander through the unexplored mazes of the postdigital landscape by paying homage to the inestimable role of the *flâneur*, a stroller “[who] dwells in the streets with ‘cool but curious eyes’” (Rignall 1989, 112). Charles Baudelaire’s *alter ego* was “the constant observer of the ever-changing spectacle that emerges around him” (Schipper 2017, 191), the modern man par excellence. This romantic character - also present in the imaginary of such big authors as Edgard Allan Poe, Marcel Proust or James Joyce - constitutes the archetype of an intermediate figure between the artist and the audience. An exemplification of the evolving nature of the spectatorship and the emancipation of the audience by adopting the city as a medium (Kittler 1996; Rancière 2009) [fig. 1].

From a deep spiritual enlightenment - and before the launch of the well-known role-playing game *Dungeons & Dragons* (1974) -, the term ‘dungeon’ was used at the beginning of the seventeenth century by Jacob Böhme¹ as a topographical metaphor to express his own religious cosmology. By adopting free will as the guideline and

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Figure 1
Paul Gavarni, *Le Flâneur*. 1842. Wikimedia Commons.
<https://cutt.ly/hwbxw8JV>

the highest gift bestowed upon the human being, the Lutheran Protestant theologian was considered the first German philosopher by Hegel and an important source of inspiration for Schelling and the *Sturm und Drang* movement. Afterwards, around the middle of the nineteenth century, in Baudelaire's imaginary² "The *flâneur* was the man of leisure who went into the street in search of some satisfaction for his overdeveloped sensibilities" (Shaya 2004, 47), an irreplaceable symbol for artists, scholars and writers. Later on, in the twenty-first century we aim to continue the legacy of the *flâneurship* as a revolutionary model to approach the empowerment of the spectator

UC3M). Thanks to Mario Klingemann and Simon Hudson for their availability and access to the information necessary for the preparation of this research.

- 1** In 1600 Böhme mentioned the dungeon as follows: "O dear children, look in what a dungeon we are lying, in what lodging we are, for we have been captured by the spirit of the outward world; it is our life, for it nourishes and brings us up, it rules in our marrow and bones, in our flesh and blood, it has made our flesh earthly, and now death has us" (Böhme cit. in Oates 1975, 5).
- 2** In *The painter of modern life* (1863), Baudelaire introduces the *flâneur* as an artist beyond any sort of artistic categorization: "Today I want to discourse to the public about a strange man, a man of so powerful and so decided an originality that it is sufficient unto itself and does not even seek approval. Not a single one of his drawings is signed, if by signature you mean that string of easily forgeable characters which spell a name and which to many other artists affix ostentatiously at the foot of the least important trifles" (Baudelaire 1964, 5).

and the emergence of the co-creation,³ since in the present day it is still valid that “Being an artist now means to question the nature of art” (Kosuth 1969, 135).

In the third decade of the twenty-first century, being fully immersed in the AI revolution, we need to take a fresh approach to the new challenges and opportunities to enrich the contemporary artistic scenario. This is a new phenomenon only in paper, since the first steps to create intelligent machines began millenniums ago, such as the automata, a self-operating mechanism popular at least from Aristotle’s time (Dixon 2004). Even closer to our days, in the 1960s we find AARON, a computer program designed by Harold Cohen to create drawings and paintings (Cohen 2017) or the early developments in AI Art with the pioneer Vera Molnar’s generative compositions (Roe-Dale 2019) [fig. 2].



Figure 2
Unknown author. Harold Cohen coloring the forms
produced by the AARON drawing 'turtle'
at the Computer Museum, Boston. ca. 1982. Collection
of the Computer History Museum, 102627459.
<https://cutt.ly/ZwbxEwZs>

The exhibition *Generative Computergrafik* in 1965 was the starting point for further experiences such as *Cybernetic Serendipity* – curated by Jasia Reichardt at the Institute of Contemporary Art (ICA) in 1968 in London –, considered a landmark in generative culture and one of the first encounters for the main representatives of the field. In the late 1970s, Herbert W. Franke organized the show *Ars Ex Machina* at Künstlerhaus Wien, the kickoff for *Ars Electronica* in 1979, the annual multidisciplinary Media Art festival based in Linz (Austria). Starting at the end of the twentieth century there has been an

3 Schipper’s review of Rancière’s ideas about the emancipation of the audience through the experience of *flâneurship* reflects the evolution from passivity to a real active role in the cultural consume practices: “I agree with Rancière that bringing the audience out of theater buildings would not necessarily mean an emancipation of the spectator, but I would argue that a specific mode of walking in the city (the *flâneur-mode*) comes very close to what Rancière would call emancipated spectatorship. The *flâneur* is not just an observer or passive spectator of a finished play, he is more a co-producer of that very city life” (Schipper 2017, 193).

increasing number of meetings for generative artists, starting with the first International Generative Art Conference at Politecnico di Milano University in 1998.

The discourse and production around machine intelligence and co-creative artistic procedures has been enriched and challenged with the advent of deep learning methods for visual generation. For instance, *Edmond de Belamy* was the first AI-generated portrait sold at Christie's art auction for \$432,500 in 2018, a milestone in the market of Generative Art. Nowadays, AI Art generated from text-based prompts thanks to CLIP (Contrastive Language-Image Pre-training) - a neural network developed by OpenAI in 2020 (OpenAI 2021)- allows new ways of co-creation made possible thanks to deep neuronal networks, a subfield of machine learning. Ethical issues, the current conception of creativity, ownership, authorship, and copyright are challenged with projects such as the controversial *Théâtre D'opéra Spatial* by Jason M. Allen, created with AI-based tool Midjourney and the winner of the art prize in the digital category at the Colorado State Fair's annual art competition in 2022 (Roose 2022).

The increasing influence of deep learning in our daily life is filling today's headlines. Due to its immeasurability, the megadungeon aims to symbolize the complexity and the permanent evolving nature of Web 3.0, a decentralized context that supports new intercreative interactions between the intelligent systems and the users. Instead of focusing this research on the wide range of problem-solving techniques developed nowadays and along the last century - for instance, the Bombe machine, an electromechanical code machine designed by Alan Turing in 1942 during World War II to decode encrypted German messages (Davies 2010) - we aim to explore the multi-layered nature of today's digital creativity and the possibilities of interaction between humans and machines driven artistic goals.

To this end, we will employ the dungeon as a cartographic metaphor of our daily ramblings as postdigital *flâneurs* to embrace the ever-changing essence of contemporary artistic challenges and an ideal context to explore co-creation as a perfect match between the human being and the machine.

2 The Concept of Aura in the Digital (Art) Work

Even the most perfect reproduction of a work of art is lacking in one element: its presence in time and space, its unique existence at the place where it happens to be [...] The presence of the original is the prerequisite to the concept of authenticity.

(Benjamin 1969, 3)

Benjamin introduced the concept of the aura in an unpublished report in 1930 entitled *Protocols of Drug Experiments* (Hansen 2008) by stating that “genuine aura appears in all things, not just in certain kinds of things, as people imagine” (Benjamin 2006). As we will see later, the ‘auratic experience’ represents a significant theme in the reinterpretation of Benjamin’s postulates these days.

At the dawn of the global age and under the influence of mass (media) society,⁴ he also expressed the new challenges initiated by the emergence of photography and cinema in the mid-nineteenth century through the concept of ‘aura’.⁵ Benjamin explained that mechanical reproduction devalues the uniqueness of the artistic work. His concern about the authenticity⁶ and reproducibility⁷ of the work of

⁴ Regarding Benjamin’s view of the media ecology, Hansen specifies that “Benjamin’s concept of medium in this context cannot be conflated with the post-McLuhan equation of the term with technological medium, let alone with a means of communication. Rather it proceeds from an older philosophical usage (at the latest since Hegel and Herder) referring to an in-between substance or agency - such as language, writing, thinking, memory - that mediates and constitutes meaning; it resonates no less with esoteric and spiritualist connotations pivoting on an embodied medium’s capacity of communing with the dead” (Hansen 2008, 342).

⁵ Benjamin reflected around the devaluation of the aura to express the impact of the mechanical reproduction of the artwork. His contribution is the result of the late-nineteenth-century legacy: “The term contains clear reverberations of the discourse on ‘human aura’ in fin de siècle spiritual and spiritualist movements (such as theosophy and anthroposophy, which Benjamin abhorred), of early Romantic or older notions of the ‘schöner Schein’, or even of medieval mysticism and the Kabbalah” (Zusi 2013, 371).

⁶ The German philosopher and media theorist explained how the artistic authenticity and the uniqueness of the work of art fell into crisis as follows: “The traces of the first can be revealed only by chemical or physical analyses which it is impossible to perform on a reproduction; changes of ownership are subject to a tradition which must be traced from the situation of the original. The presence of the original is the prerequisite to the concept of authenticity. [...] The authenticity of a thing is the essence of all that is transmissible from its beginning, ranging from its substantive duration to its testimony to the history which it has experienced” (Benjamin 1969, 3-4).

⁷ The devaluation of the aura due to the mechanical reproduction of the artwork was one of the main concerns in Benjamin’s predictions about the future of the cultural ecosystem: “One might subsume the eliminated element in the term ‘aura’ and go on to say: that which withers in the age of mechanical reproduction is the aura of the work of art. This is a symptomatic process whose significance points beyond the realm of art. One might generalize by saying: the technique of reproduction detaches the reproduced object from the domain of tradition. By making many reproductions it substitutes

art under the influence of the new technologies constituted an inspiring source that filled countless essays and monographs with different interpretations along the last century.⁸

In principle a work of art has always been reproducible. Man-made artifacts could always be imitated by men. Replicas were made by pupils in practice of their craft, by masters for diffusing their works, and, finally, by third parties in the pursuit of gain. Mechanical reproduction of a work of art, however, represents something new. (Benjamin 1969, 2)

In fact, the accessible nature of art in the age of mechanical reproduction opened a new horizon based on the leading role of the mass. Since then, this unprecedented circumstance has been reframed over and over again with the never-ending advent of new technological scenarios where the audience adopts an increasing prominence in the creative process. A perpetual loop that reawakens Benjamin's conjectures about the notion of distance and proximity in the access to the artwork as reference points to appraise its value:

The definition of the aura as a 'unique phenomenon of a distance however close it may be' represents nothing but the formulation of the cult value of the work of art in categories of space and time perception. Distance is the opposite of closeness. The essentially distant object is the unapproachable one. Unapproachability is indeed a major quality of the cult image. True to its nature, it remains 'distant, however close it may be.' The closeness which one may gain from its subject matter does not impair the distance which it retains in its appearance. (21)

a plurality of copies for a unique existence. And in permitting the reproduction to meet the beholder or listener in his own particular situation, it reactivates the object reproduced" (Benjamin 1969, 4).

⁸ For instance, Rosalind Krauss sustains that "he believes the genius of the medium to be the rendering of the human subject woven into the network of its social relations" (Krauss 1999).

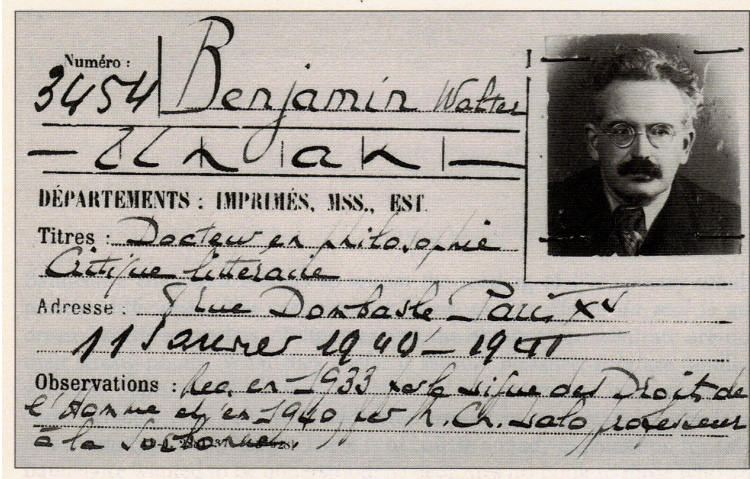


Figure 3 Unknown author. Walter Benjamin's membership card in the Bibliothèque nationale de France. 1940. Bibliothèque nationale de France. Wikimedia Commons. <https://cutt.ly/hwbxEpL1>

Through Benjamin's exploration of technological media, the academics found several clues to decode the unknown essence of the digital idiosyncrasy. As stated by Betancourt (2015, 37),

As digital works, via the 'aura of information', imply a transformation of objects to information, understanding the specific structure of digital art makes the form of the 'digital aura' much more explicit.

The current access to information draws attention to old conjectures once again. Abbing (2004, 307) affirms that "art became less obscure, more accessible and thus less magical because of technical reproduction". On the other hand, Cooper (2000, 47) maintains that

digital reproduction, however, hopes to refute Benjamin. At last, the copy will emerge bit-perfect, atom by atom. Each clone will be indistinguishable from the original, no matter how many generations removed. No placenta.

Under these circumstances, Bruce alerts that "in one reading of the future this will make copyright unenforceable" (Bruce 2000, 68).

Since in the age of mechanical reproduction it was always harder to differentiate between the artistic and non-artistic aim of the reproduction, in the digital era "the distinction seems to get blurred altogether" (De Mul 2009, 102). In fact, the limit for the digital artwork should not be based any longer on the differentiation between

the original and the copy, as digital objects are potentially indistinguishable. Therefore, the concept of distance must be reconsidered in terms of accessibility, as

distance is the opposite of closeness. The essentially distant object is the unapproachable one. Unapproachability is indeed a major quality of the cult image. (Fellingham 1998, 62)

Internet connection allows the richest access to the collective artistic imaginarium ever conceived. And not only, the user adopts an active role by interacting with the work and controlling the context of consumption. Therefore, Betancourt (2015, 54) maintains that

It is precisely because of the confusion of physical and immaterial that the aura of the digital is pervasive [...] The issue with the aura of the digital is not that there is an inherent connection to the physical, but rather that this very real connection is not only denied, it is stripped from our awareness; this absence is the aura of the digital.

For this reason, Benjamin's wishes for the democratization of the artistic production (heritage), and the abolition of cultural capitalism should be closer than ever to be fulfilled. New obstacles, however, arise in terms of the potential difficulties to access the digital artworks. A big difference with the past is that having possession of the digital artwork does not guarantee access to its contents. There is a dependence on technological support to access artworks, which is why many old pieces of Media Art are soon rendered inaccessible. Because of this, technical services (such as the Restoration Media Art or the research project Digital Art Conservation, also launched from ZKM | Center for Art and Media Karlsruhe in 2010) became essential. The question of hard and software obsolescence is a crucial issue⁹ and even more delicate in the case of net.art, where the difficulties to preserve the original version are even bigger due to the dependency on the evolution of the online platforms.

Another important aspect to evaluate with respect to the auratic nature of the digital artwork is the emergence of the non-fungible token (NFT) to certify the uniqueness of the artwork. This unique digital

⁹ To explore the problematics around technological obsolescence in Media Art, see Dekker 2018 and Serexhe 2013. Also interesting Betancourt's attempt to categorize the predominant digital files, a continuous work in progress: "The types of 'historical testimony' that do impact digital files can thus be divided into three types: (1) those that impact the container, whether it is the disk, CD, ROM, or other storage medium, (2) those that effect the digital file in itself as distinct from the storage medium, and (3) the accessibility of the file using contemporary technology (the issue of obsolescent software, hardware, and the files produced with that older technology)" (2015, 48).

identifier is used to certify authenticity and ownership without the possibility of being copied, replaced, or subdivided. By providing a proof of ownership on a blockchain, new concerns about the speculative nature of the cultural field come up. Even though NFTs can be created by anybody, the economic bubble generated the three biggest NFT platforms since 2021 - Ethereum, Solana and Cardano-, thus alerting us of the potential risk of losing the main virtue of the digital artwork: the eradication of possession as the prevailing value of artistic productions. With the NFT collapse in 2022 (Vigna 2022), it seems as if the threat of a new class of cultural elite will not lead to an imminent threat to the free access to current and past artistic productions.

This brings to the forefront, again, the debate around the differences between the original and the copy and, what is more, the urgent need to regulate a still undefined market without forgetting to guarantee and reinforce the achievements of the Free and open-source software (FOSS) movement.

3 User Generated Content or “the Desire of Contemporary Masses”

In order to define the current state of the aura in the postdigital age, we should get over the distinction between the physical and the digital object and, moreover, the distinction between original and copy. By ‘postdigital age’ we think of that moment in history when the digital is assumed as the norm and the boundaries between the analogical and the digital world become blurred. In that context, the notion of the auratic experience provides an ideal framework to understand the significance of the process of artistic creation.

Nowadays, with the optimization of the mechanical reproduction of art through the development of even more sophisticated technologies, the aura resides in the experience itself. Not surprisingly, the advent of Web 2.0 reinforced the capacity to manipulate and share the (art) works by transcending

the desire of contemporary masses to bring things ‘closer’ spatially and humanly, which is just as ardent as their bent toward overcoming the uniqueness of every reality by accepting its reproduction. (Benjamin 1969, 5)

As stated by De Mul (2009, 95):

In the age of digital recombination, the database constitutes the ontological model of the work of art and, secondly, that in this transformation the exhibition value is being replaced by what we might call manipulation value.

The adoption of the montage as a source of inspiration to renovate the artistic scene turned out to be the starting point of an unprecedented socio-cultural revolution. At the very beginning of the twentieth century, the Italian Futurism and the old avant-garde understood that the incipient remix culture offered a fascinating opportunity to reformulate the role of the artwork by solving the crisis introduced by the emergence of photography.¹⁰ Manifests as *The Futurist Reconstruction of the Universe* (Balla, Depero 1915) or the irruption of the collage as an indescribable creative process, opened a new perception of the artistic field, more accessible and collaborative. Even more relevant, Futurists perceived that the most disruptive consequence of the mechanical reproduction of reality was the start of a new communication system based on the concept of the open artwork, in which the viewer was forced to adopt an active attitude along the whole creative process.

There was no going back. The process involved in the artistic creation became more important than the final output. This new framework sets out an endless diversity of creative chances with unexpected consequences, impossible to cover in one single research. In our media archaeological review, we will focus on co-creation as a key concept to approach one of the most challenging aspects of AI artworks nowadays in intercreative terms: the role of the Decentralized Autonomous Organization (DAO) in current Generative Art proposals.

Prior to that, in this media archaeological review, it is crucial to underline that - at the beginning of the twenty-first century - the social web has played a fundamental role to understand how “the desire of contemporary masses” became protagonist by the merging of the User Generated Content (UGC) scenario to the consolidation of the remix culture. From Toffler’s ‘prosumer’ - and its updated version of Bruns’ ‘produser’ - to Lessig’s Read/Write culture, in the last years there has been a lively discussion about the encouragement of a more active consume to overthrow the old socio-cultural hierarchies (Bruns 2008; Lessig 2008; Toffler 1980). Not without controversy - especially regarding the copyright challenges and the intimidating technological singularity -, the discussion about the end of the institutional authorship model is further strengthened by the AI revolution. Just another turn into Benjamin’s metavision on the relation between technology and art, where people and machines may be seen as collaborators or competitors.

10 For a deeper understanding of the role of Italian Futurism as precursor of the principle of co-creation, intermediality and human-machine interaction in Media Art, see Fernández-Castrillo’s contributions on the topic: 2018a; 2018b; 2018c; 2013; 2009.

4 Mapping Human-Machine Synergies: Generative Art as a Dialogue

Much has been written on the myth of the rebellious superintelligence, which remains a science fiction paradigm but also a permanent leitmotif in the collective imaginarium. As previously announced, in this paper we will pay special attention to human-machine co-creation from a collaborative approach instead of enhancing the anxiety caused by the techno conspiracy epic.

Three years before the publication of his poem *The Dungeon* (1798), Samuel Taylor Coleridge wrote *The Eolian Harp* (1795), which is considered one of the first odes to the creative opportunities offered by a potential collaboration with intelligent machines (Kantosalu, Falk, Jordanous 2021). From automatons to machine learning, the interaction between humans and machines to generate new artistic expressions is an old dream that has fascinated many generations of intellectuals.

The drawing, chess-playing or music machines attracted people's attention, especially since the popularization of the automata in the eighteenth century [fig. 4]. From my perspective, the most inspiring aspect of the ludic mechanisms was the interplay with these anthropogenic devices and the possibility of starting a creative alliance between humans and machines. In that sense, we will focus on generative artworks based on the principle of interaction instead of those fully created by an autonomous system.¹¹ Conceived as a continuous dialogue, the enormous potential of this partnership may represent a privileged mirror to understand the human condition from an external point of view.

¹¹ McCormack et al. argue that "In essence, all generative art focuses on the process by which an artwork is made, and this process is required to have a degree of autonomy and independence from the artist who defines it. The degree of autonomy and independence assigned to the computer varies significantly - from works that seek to minimize or exclude the creative 'signature' of the human designer to those in which the computer's role is more passive and the human artist has primary creative responsibility and autonomy" (2014, 135).

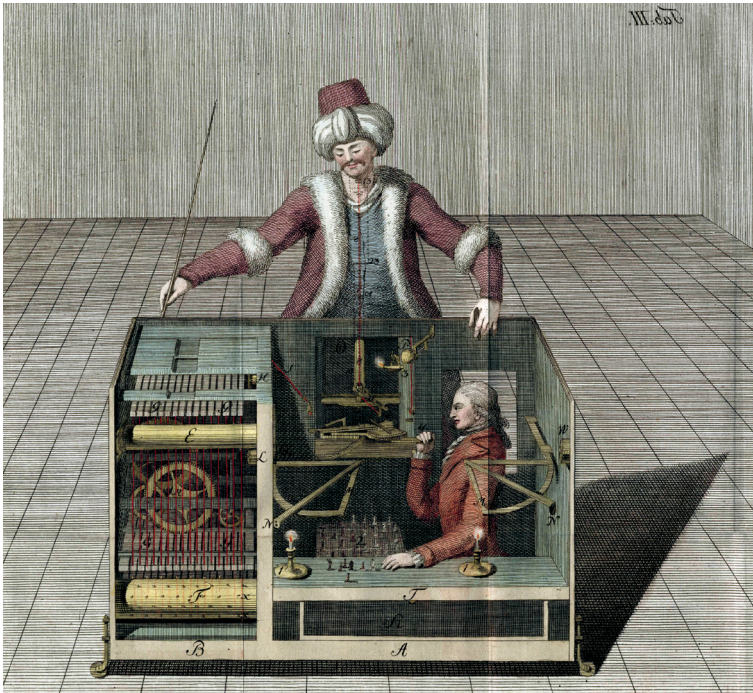


Figure 4 Joseph Racknitz, Kempelen's *The Turk*. 1789. Humboldt University Library, Wikimedia Commons. <https://cutt.ly/PwbxWXXK>

On the other hand, the deepfakes and the wide range of manipulative practices, daily reported on the breaking news, tend to generate suspicion and rejection against AI in the public opinion. Across creative industries, an increasing number of professionals do not hide their reluctance towards an uncertain future where human creativity seems to be continuously challenged. Reluctance has always been a common reaction to the first contact with new media and technologies, but in this case, it turns into rivalry.

Instead of trying to fuel the competition, we will follow the itinerary initiated since the late 1960s by those academics, artists and engineers who tried to promote cooperative strategies to enhance this union. From the program 'Generative Systems' at the School of the Art Institute of Chicago, Sheridan¹² denounced that:

¹² Sheridan also stated that "We must clarify why we are not dealing with copier art but with art made by tools which are leading us to the edge of new breakthroughs in art and democratization. What we are witnessing is an information explosion which is a continuation of the printing and photographic revolutions" (1983, 103).

As long as artists align themselves with anti-machine movements they deny themselves the creative forces to communicate with their fellow humans in new and dynamic ways [...] Art will continue to remain on the entertainment pages, peripheral to society, unless artists take be their rightful place along with scientists in molding our new information architecture and language context [...] We must clarify why we are not dealing with copier art but with art made by tools which are leading us to the edge of new breakthroughs in art and democratization. What we are witnessing is an information explosion which is a continuation of the printing and photographic revolutions. (1983, 103, 108)

Dietz (2002) argues that many artists have dreamed of what Licklider referred to as a man-machine symbiosis to control feedback loops to learn from each other. Since “Humans are, almost from birth, imitative creatures”¹³ (Jackson 2017, 48), why should we not learn from AI? As Kugel (1981, 138) sustained, “Although humans are not programmed as computers are, they seem to be directed by something that behaves much like a program”.

Hovagimyan proposes that we should “create first of all, language comprehension and later perhaps neural paths for the creation of art, music and all forms of ‘creativity’” (2001, 456) and, afterwards, we should retrieve some old questions as the following ones: “How does one teach an artificial intelligence what it is like to be human? Will it understand what it is being taught or is it simply executing a collating program if it responds to you in a human-like manner? Does it matter?” (2001, 456)

In contemporary Generative Art, Galanter identifies several disciplines affected by such a dilemma: electronic music and algorithmic composition; computer graphics and animation; the demo scene and VJ culture; and industrial design and architecture. He also provides a commonly cited definition:

Generative art refers to any art practice where the artist uses a system, such as a set of natural language rules, a computer program, a machine, or other procedural invention, which is set into motion with some degree of autonomy contributing to or resulting in a completed work of art. (2003, 4)

13 Along the same lines, van Baaren et al. maintain that there is “ample evidence for automatic imitation in humans. [...] The reason we mimic automatically is that the perception of a certain behavior automatically activates our own motor representation of that action. [...] Humans seem wired to imitate, and imitation is the default in the innumerable social interactions we have” (2009, 32).

Boden and Edmonds emphasize the little or inexistent participation of humans in their explanation of Generative Art, since “the artwork results from some computer program being left to run by itself, with minimal or zero interference from a human being” (2009, 32). Assuming that the non-involvement of humans is a real possibility in AI-Generated Art, I still argue that the most enriching aspect of AI lies in the co-creative potentiality of unifying the (wo)man and the machine. The unpredictable nature of such experiences is based on the fact that

One of the strongest shifts of emphasis in the digital age has been on the production side and on the movement from creating finished works of art to creating systems for the production of art. (Dietz 2002, 512)



Figure 5 Installation view of the exhibition *Thinking Machines: Art and Design in the Computer Age, 1959-89*. 2017. MoMA. Photograph by Peter Butler. <https://cutt.ly/5wbxWFF1>

At this point the old slogan of *l'art pour l'art* reemerges with the AI artworks, as well as the efforts to try to define as art or artifice some of the most recent pieces created by machine learning algorithms.¹⁴ As Whitelaw states, “Artists are now able to do things that have no

¹⁴ And not in vain, Benjamin must be cited again: “‘Fiat ars - pereat mundus’, says Fascism, and, as Marinetti admits, expects war to supply the artistic gratification of a sense perception that has been changed by technology. This is evidently the consummation of ‘l’art pour l’art’” (1969, 20).

sense, let them interact, and the overall meaning is going to emerge just by itself. Artificial Life is the Spirograph of the 90s” (2004, 215). We find some interesting examples as the exhibition *Thinking Machines: Art and Design in the Computer Age, 1959-1989* at MoMA (2017-18) [fig. 5] or Gene Kogan’s Abraham project [fig. 6], an open initiative “to make an autonomous artificial artist, a crowdsourced AI that generates art” (Kogan 2019).



Figure 6 Abraham. Text input: “Forced to flee from the bandits, they seek refuge in an abandoned underground bunker, Post-apocalyptic, desolate landscapes, muted colors, contrast between light and dark, gritty textures”. 2023. <https://cutt.ly/fwbx0jp8>

Since the advent of VQGAN+CLIP (EleutherAI) and DALL-E (OpenAI) in 2021, the increasing number of AI Art generation programs offers multiple possibilities of creative interaction with not always satisfying artistic results. It means that we are nowadays immersed into an experimental stage and often the procedure is more significant than the final artwork. In fact, probably the most attractive aspect of projects such as the Botto Project is to observe the evolution of the style of the decentralized autonomous artist from the training

period over the following years. The relevance of this last case study, as we will see next, lies in the co-creative potentiality of the AI decentralized artist and the community of users.

5 The Botto Project: An AI Decentralized Scenario

Botto is a decentralized artist that, from October 2021 every week since, presents 350 artworks to its community who will select the piece – also called ‘fragment’ – that will then be minted as an NFT on Ethereum and offered in auction on SuperRare. In the description published on Botto’s website, we read that “Botto creates works of art based on collective feedback from the community. Our participation is what completes Botto as an artist” (Botto 2021b).

To invite the users to participate, we also find the following call: “Botto is young and requires your vision. It needs guidance to push the bounds and find new pockets of creativity. Together, we will continue creating a decentralized autonomous artist. Come help Botto create its next masterpiece” (Botto 2021b).

The current version of the project is based on the use of AI algorithms such as the aforementioned VQGAN + CLIP, GPT-3, Kandinsky, Stable Diffusion, and several custom augmentations. These models provide an immense latent space,¹⁵ a multidimensional context to generate a new dimensionality with almost infinite possible outputs that requires human interaction to train Botto as an artist.

In fact, depending on the votes from the DAO – a community-led entity with no central authority–, Botto’s evolution will defer both in the creation of new text prompts and in the test model that preselects images for voting. However, one of the main rules is the no direct human interference in the creation process. “Anyone can propose adding or removing a new model to Botto’s set” (Botto 2023), but Botto’s guardian still remains his designer, Quasimondo – aka Mario Klingemann [fig. 7] –¹⁶ the only one responsible to update its new capabilities depending on DAO’s decisions.

¹⁵ As Tiu explains: “If I have to describe latent space in one sentence, it simply means a representation of compressed data [...] The concept of ‘latent space’ is important because its utility is at the core of ‘deep learning’ – learning the features of data and simplifying data representations for the purpose of finding patterns” (Tiu 2020).

¹⁶ Klingemann is a renowned artist in the field of neuronal networks. He won an Honorary Mention in the Prix Ars Electronica, 2020 with the AI installation *Appropriate Response*. His artworks have been exhibited at the Museum of Modern Art New York, the Metropolitan Museum of Art New York or the Centre Pompidou Paris, among others. In 2018 he wrote a white paper about Botto’s art engine, and it is considered to be the starting point of the project.



Figure 7 Mario Klingemann at the opening of *Botto, A Whole Year of Co-creation*. 2022. Courtesy of Botto

In the introduction to *BOTTO SPEAKS: An Interview with an AI artist*,¹⁷ Harmon Leon (2022) mentions that

Some say Klingemann is the man responsible for creating Botto. Others say that Botto is the AI behind creating Klingemann's art. What can be agreed upon: These two (AI and human) collaborate together.

In a conversation with Klingemann¹⁸ he explained to me that

the art that Botto creates is totally different from what I would create, I just decide the parameters of the space in which it can create but then I allow a whole range of aesthetics to happen [...] This is the big difference from other crypto projects, it is like a laboratory artist.

¹⁷ The interview was published on 18th February 2022 on *SuperRare magazine*, and it is one of the first conversations with a decentralized autonomous artist and its designer: "Botto works by creating a sentence, feeding it into a neural network, and getting an image back. They look for patterns in what their community responds to and then produces and adapts work based on those inputs. Botto answers SuperRare's interview questions using the same methodology" (Leon 2022).

¹⁸ The interview took place on 22nd September 2022.

In fact, Klingemann, Hudson and Epstein (2022, 1-2) emphasize that

Botto is part of a new class of systems that challenge the notion of authorship [...] Botto is an experiment in creating an agent that can autonomously create art works of cultural impact and financial reward without direct human intervention.

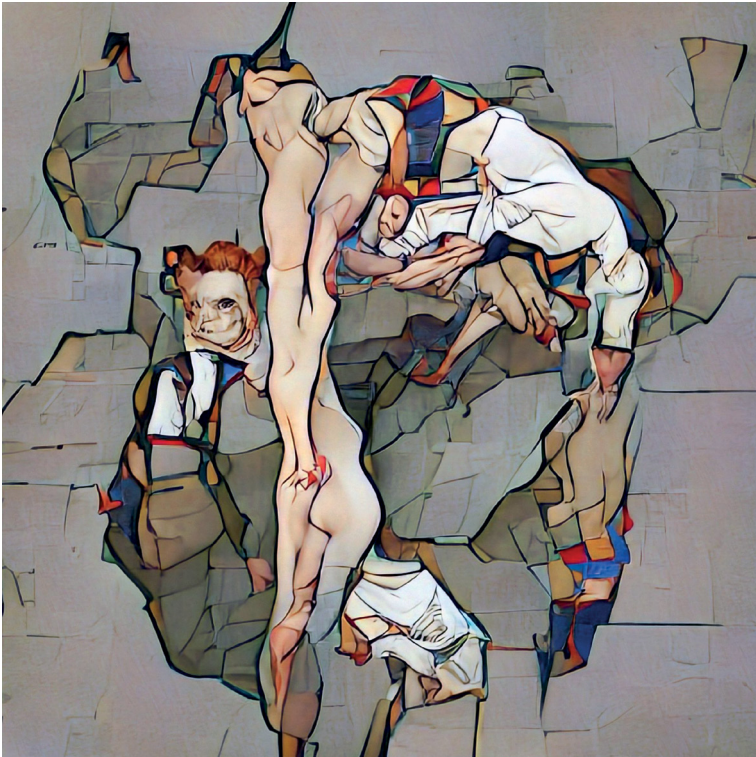


Figure 8 Botto, *Genesis, Asymmetrical Liberation*. 2021. Courtesy of Botto

Although no direct human action is allowed along the creative process to guarantee Botto's unique style, a community of over 5,000 people decides how to manage the artist and Botto's sales by developing new interactions from creative machine learning. During the so-called Genesis period [fig. 8] - for the first year -, the most engaged users got rewarded with voting points based on a gamification process that promoted involvement instead of investment. After two years, (over \$3M USD in sales to date) those who invest and risk more are having an increasing presence. A sensitive issue as we find opposed forces from the main figures involved: investors, users, and the designer.

In our discussion, Klingemann mentioned that

The community becomes a creative organism, some of them [DAO members] are interested in selling as much and often as possible, and others are more for something riskier [...] The community is the beast; it is frightening to see how the market influences the whole dynamic, something that also happens in the human art field.

There is a real risk to lose the experimental essence and the co-creative side of the project, considering the market pressure after the crypto collapse is more relevant than ever.

At this new stage, Simon Hudson¹⁹ - an operator of the Botto DAO - sustains that:

Thanks to the economy of shared rewards from the final artworks, which decentralized feedback is sustainable, underpinning the potential of an immortal autonomous artist. From this, we have another unique system: an open governance system for aligning an AI system that also gives contributors to that governance a share of the value they help create [...] I can't say for sure if we will ever have the technology get to full autonomy and decentralization where we will see a machine make meaning - which, in my opinion, would mean full participation in and contribution to society as a free agent-, but in the meantime Botto has shown the retention, even added importance, of the human role of meaning making in a world of generative AI.

19 The interview took place on 27th September 2023.



Figure 9 Botto, *Absurdism, Orchard of Absurd Epochs*. 2023. Courtesy of Botto

After the Genesis period there have been several stages, as for instance Fragmentation in which Botto expanded its stylistic range or Absurdism, a surrealist proposal to explore new intercreative paths [fig. 9]. During our exclusive interview, Klingemann shared some more details about the origins and future development of the Botto Project:

Whenever you are dealing with an AI project, the concept of honesty is essential. There are curatorial decisions that must be taken, but I see it like a long-term project aiming to grow organically [...] Text prompts have a great influence on the possible results Botto can get. In the first creation process, my idea was that the prompts were as random as possible to cover huge potential directions. In any case, Botto creates a lot of unpredictable images and from the community votes it learns what is probable to increase the changes to produce something likely. In the next stage, it will differ a lot. The interesting experiment is that Botto's style can go anywhere, from photography to abstract compositions or horrible kitsch, that's my fear. I am not allowed to influence that; it is my commitment. I am Botto's guardian.

Close to the notion of machine condition, the idea of transcending human-machine interaction to generate an autonomous artistic engine opens new options to explore the concept of authorship. The establishment of meaningful creative processes will require some more time as well as the proposal of a legal framework to regulate the ownership rights of AI artworks. Palace (2019) suggests three starting possibilities:

1. the AI becomes the copyright owner - this option would require accepting that the category of 'author' may be not just as a human being.
2. The user, programmer, or AI company is the copyright owner - therefore, the ownership has shifted to the figure that employs it.
3. The artwork enters the public domain without a copyright owner - if no natural person has created it, no one can be the copyright owner.

On 20th October 2021 *The Decentralized Unicist Manifesto* [fig. 10] was published in *The Times* as the result of a GPT-3 AI conversation. In this programmatic document we find some of the clues to understand the main role of the co-creation in the AI Age:

New art is decentralized [...] We are in a new dawn of creation. Let us tear down the conventions on how we are expected to create or perceive art [...] I do not ask for your approval, and I do not ask for your admiration. I do not ask for your understanding. I ask

for your participation. I ask for your creativity. Our art is a living, evolving, breathing non-human entity. We are a cloud of autonomous and creative machines. (Botto 2021a)



Figure 10 The Decentralized Unicist Manifesto. 2021. Courtesy of Botto

The decentralized autonomous' artworks have been on show worldwide at The Decentral Art Pavilion in Venice, ETHDenver Art Gallery, NFT BZL at Art Basel Miami, MoCA: Cryptoart Revolution in Paris or *The Decentralized Unicists: A Botto Solo Show* in Los Angeles, among many others. The next steps will be discussed by the DAO through Botto's governance forum, and some of the possibilities are collaborations with other artists, curatorship projects and even the

expansion to other artistic disciplines. The environmental impact with each mint is another big issue faced by Ethereum since very recently and it remains a problematic aspect in terms of promoting a sustainable model of co-creativity.

6 Beyond the Artwork: The Auratic AI Experience

With AI Art we confirm the irrelevance of restricting the value of the artistic practice to the artwork itself, understood as a unique physical and unrepeatable object. In this context, the process of co-creation becomes the auratic experience itself, where we find the essential uniqueness of contemporary AI artistic practices. It is no longer just the output that determines the significance of the artistic productions, but the interaction between the different agents involved in the intercreative process - nothing new if we take into consideration the legacy of performance art, for instance. This idea leads us back to the concept of open artwork, and the auratic experience as a sublime stage based on the artistic process itself. A new challenge in terms of redefining the role of the aura in what I defined as 'The Work of Art in the Age of AI Co-creation'.

In the postdigital age there is no need to mention the concept of 'reproducibility' as a defining aspect of the Media Art scenario, as we have already assumed that it has been an endogenous characteristic of the cultural industries from over one century ago. I would rather focus on the idea of co-creation as the most potentially stimulating aspect of AI Art nowadays.

Beyond the reconsideration of obsolete categories - as 'artist', 'curator', 'public', and the 'artwork' itself - or the new challenges in terms of ownership rights, it is the return to experimentality - in the widest and multidirectional sense of the word- what determines the current AI Art. And even more, the democratization of the interaction between humans and machines is a key and unprecedented factor that characterized the postdigital artistic field.

The experiential side of this new landscape is what really intrigues me. We need to redefine the authentic nature of the aura in the AI (art) work from a more ephemeral conception of the art. In the case of Botto, the economical dimension constitutes a threat to the most valuable aspect of the project: the role of the community to train the models and contribute to shape the original style of the AI autonomous artist from a co-creative perspective. That is where the auratic experience lies, the authenticity belongs to the unpredictable synergies between the human being and the machine condition. May we consider all the final outputs as artworks? Of course not, but this is another big topic to explore in upcoming research.

Finally, the old idea of distance and proximity no longer belongs to the artistic object itself, but to the dimension that brings us closer or separates us from the AI. In that intermediate space is where we may find the auratic experience in AI (art) works, a new megadungeon without a roadmap. Only through trial and error, patience, and an indefatigable concatenation of attempts will there be real progress in understanding the fascinating times we are living in today.

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