

5. ARTIFICIAL INTELLIGENCE IN CONTEMPORARY VISUALITY

Cătălin Soreanu²⁴⁵

Abstract: *The new discourses in the contemporary art space and in the art education field regarding artificial intelligence are a consequence of a major mutation in the paradigm of contemporary art. Starting from the visual forms generated by artificial intelligence as a creative-technological instance, the current research aims to discuss the reconsideration of the human contribution in the authorial legitimation of art. The author, the lecturer, the systemic process of communication specific to art, all other instances and relationships submit to the effort to incorporate a tool of knowledge that goes beyond the traditional functionality of a passive resource, migrating to forms of active autonomy. We are witnessing the revolutionizing of the dialogue between creative technologies and the world of art, in which active instances systematically reinvent themselves, eluding the specific quantification of information technologies specific to the artistic field.*

Keywords: *artificial intelligence, contemporary art, education, technology, visual culture*

1. Introduction

This article addresses today's mediatic paradigm which reflects the cultural understanding of objectivity in the communication process, how the truth is reflected in the message, and questions the way the meaning is formed at the intersection of personal subjectivities and collective objectivity. Since we are both creators and consumers of cultural information in the "global village", we consume advertising, and we digest news in ways inconceivable a few years ago. We talk about information, we read images, we look at texts, we listen to videos, and we understand a wide array of communication supports which define our very identity as information processors and "matrix" workers²⁴⁶. We are creating both the context, and the vehicle of this paradigm where the information is the main currency, and the visuals are dominating the news exchange market.

While analysing the forms of the contemporary communications media, we will investigate the advertising patterns, the news dissemination, and the everyday culture of images, and we will attempt to summarize the outcome of our interactive position as active players in this globalized media industry. As a critical and conceptual tool, we will address the Rashomon effect, a principle which allows us to investigate the communication process in its multiple perspectival dimensions, questions the values and the validity of the memory and recognition as cognitive processes, and provides a multi-perspectival tool of digesting the communication content.

2. Selective milestones

Artificial intelligence (AI) is a field of computer science and computer science that focuses on developing systems and technologies capable of imitating human

²⁴⁵ Associate Professor PhD., "George Enescu" National University of Arts, Iași, România, email: csoreanu@gmail.com, ID ORCID <https://orcid.org/0000-0001-6958-1809>

²⁴⁶ The McLuhan's "global village" concept and the artist as "information processor" were discussed by Lev Manovich in his analysis of "The language of new media" from 2001 (Manovich 2001)

intelligence and performing tasks that require human thinking. An analysis of the way in which the art based on artificial intelligence is present in the field of contemporary visuality obliges us to consider some selective moments as significant milestones, precisely because they highlight the creative contributions of scientists and researchers to a domain traditionally associated with human intelligence and creativity.

Bearing a resemblance to an artistic creativity pattern, the essence of artificial intelligence lies in its ability to learn and make decisions, often drawing upon incomplete information. In 1763, Thomas Bayes formulated a framework for probabilistic reasoning, employing mathematical principles to adjust the probability of a hypothesis as additional information is acquired (Alquier 2022, 1-13). Today, Bayesian methods are gaining importance in “machine learning” and artificial intelligence problems, being extremely popular for statistical inferences procedures. This pivotal contribution of “thinking in numbers” paved the way for Bayesian inference to appear as a crucial method in machine learning, marking one of the earliest landmarks in the timeline of artificial intelligence that we would consider in our research.

Arthur Samuel (researcher and engineer of IBM in 1959) introduced the term “machine learning” while describing the process of programming a computer so that it learns to play a better game of checkers than the program’s author²⁴⁷. Assuming complex processes such as machine learning capability, solving intricate problems, proving efficiency in processing voluminous data, and continuous innovation in development of advanced technologies, the “machine learning” process is one of the critical domains in artificial intelligence that pertains to the ability of systems to learn and enhance performance based on data and experience. Defining it as a process that emulates the human ability to get knowledge and nurture and educate through learning sets up a bridge between artificial intelligence and the human intellect.

“Thinking” and “learning” as artificial intelligence processes require consistent resources to navigate the modern visual culture, leading to our next milestone of evolution – the democratization of data. In 2009, Stanford researcher Fei-Fei Li²⁴⁸ launches ImageNet, a database of 14 million images which were later used to train neural networks (are a mathematical model inspired by the functioning of the human brain), taking AI into a new age. The platform was initially created to support the annual image recognition competition known as the ImageNet Large Scale Visual Recognition Challenge (ILSVRC), where the participants used this database to train image recognition algorithms and evaluate their performance in identifying and classifying various objects in images (ImageNet 2017).

The arrival of AI in the art domain, specifically on the world auction scene, was signaled in 2018 with the first AI work at auction in Christie's Prints & Multiples sale, when the artwork title “Portrait of Edmond Belamy” was sold for

²⁴⁷ Arthur Samuel said that “enough work has been done to verify the fact that a computer can be programmed so that it will learn to play a better game of checkers than can be played by the person who wrote the program.” (Samuel 2000)

²⁴⁸ Dr. Fei-Fei Li is the inaugural Sequoia Professor in the Computer Science Department at Stanford University, and Co-Director of Stanford’s Human-Centered AI Institute. Online source: <https://profiles.stanford.edu/fei-fei-li> (accessed: 2024.01.02)

\$432,500 (Christie's 2018). A Paris-based trio artistic group titled “Obvious”, fascinated by the artistic potential of artificial intelligence, worked with an algorithm fed with 15,000 images of portraits from different artistic time periods, having it generate a new portrait, simulating the original works that could pass as man-made²⁴⁹. Similar cases are the ones from August 2022 in Colorado, when Jason M. Allen won the first place in the emerging artist division’s “digitally-manipulated photography” category at the Colorado State Fair Fine Arts Competition, with an image titled “Théâtre D’opéra Spatial”, created with Midjourney, a “bright, surreal cross between a Renaissance and steampunk painting”²⁵⁰, which sparked intense debates within the art community, reigniting discussions about the legitimacy and validity of artwork generated with the assistance of a computer.

We should also mention the case of the German photographer Boris Eldagsen, who won the Creative category of the prestigious Sony World Photography Award. He refused the prize on the grounds that he used an artificial intelligence image generator to create his submission, specifically the image generator DALL-E 2. His intention was to highlight the unique aspects of AI-generated images while also addressing the distinction from classical photography techniques: “AI images and photography should not compete with each other in an award like this. They are different entities. AI is not photography. Therefore I will not accept the award.”²⁵¹

The event itself marks multiple directions for analyzing the immersion of artificial intelligence in the field of contemporary art. It raises issues of authorship legitimacy, copyright, the validity and value of the artifact as a work of art, and more. Although experiments with GAN algorithms have been ongoing for at least 10 years, experts believe that art generated with the help of artificial intelligence is still in its infancy²⁵². While not displaying the full potential of today’s generative art algorithms, the institutional breakthrough and the collision of cultural knowledge were consistently hailed as an AI success story in the face of the traditional art world.

3. Artificial intelligence in today’s image culture

Today, artificial intelligence is omnipresent, inevitable, and irreversible. It is present in military applications, advanced scientific research, marketing and advertising, promotion, and industry. AI is present in various domains, including the construction of three-dimensional models, data processing, coding, video, audio, image, and text production. Without specifically referring to art (although we are also considering the direct implications of it into New Media Art, Technological Art, Internet Art, VR/AR Art, Generative Art, Interactive Art, and Digital Art), there are extensions of major utility programs/applications that incorporate the facilities

²⁴⁹ “Obvious” is a Paris-based collective consisting of Hugo Caselles-Dupré, Pierre Fautrel and Gauthier Vernier. They are engaged in exploring the interface between art and artificial intelligence. Online source: <https://obvious-art.com> (accessed 2024.01.02)

²⁵⁰ Online source: <https://edition.cnn.com/2022/09/03/tech/ai-art-fair-winner-controversy/index.html> (accessed 2024.01.06)

²⁵¹ Online source: <https://www.artforum.com/news/sony-world-photography-award-winner-reveals-entry-was-ai-generated-rejects-prize-252639/> (accessed 2024.01.06)

²⁵² Robbie Barrat, a young artist working with AI, said “People have been working with low resolution GANs like this since 2015 (...) No one in the AI and art sphere really considers them to be artists—they’re more like marketers”. Online source: <https://news.artnet.com> (accessed 2024.01.03)

offered by AI production – Photoshop, Excel, PowerPoint, Word, all web browsers, Windows and OS operating systems, etc.

The specific technologies through which AI creates imagery today, a bridge to artistic visualization, are just a part of the multitude of technological solutions through which AI runs, including specific processes and algorithms. For instance, “machine learning” is a crucial field in AI that refers to the ability of systems to learn and improve performance based on data and experience. It uses algorithms to analyze data, finding patterns and relationships, so that systems can make predictions and decisions without being explicitly programmed. This domain is heavily used in today’s visual culture and artistic domains, where a lot of artists are using it to create artwork, to analyze and personalize artistic preferences through data analysis, to generate artifacts, etc. In the same manner, using “neural networks” (a mathematical model inspired by the functioning of the human brain) in numerous ways, includes operations such as pattern recognition, classification, and the generation of creative content.

These processes specific to neural networks are used in art to create images, sounds, or other conceptual structures by applying complex processes to the first data. To create new and original content, such as images, music, and text, one can also find the use of “generative algorithms”, which are generating data that resembles patterns learned from earlier information. A notable example in this regard is Generative Adversarial Networks (GANs), which consist of two neural networks (a “generator” and a “discriminator”) competing to create and evaluate the generated content. Generation algorithms play a crucial role in contemporary art, as they help producing innovative and challenging works with the aid of artificial intelligence, as the previously mentioned example of the “Portrait of Edmond Belamy” created by the artistic group “Obvious”.

The artificial intelligence algorithms that we can find today in so many domains (visual arts included) are all using the patterns and the understanding of image as it was developed in centuries of visuality. These software are able to completely generate extremely realist images of people which never existed²⁵³, to copy the expressive style of an artist and to replicate, create or modify any image while applying that specific style (image-to-image translation, or style transfer²⁵⁴), to create realistic images from basic sketches (based on a specified category of objects, the algorithm then recommends a plausible completion with a synthetically generated image corresponding to the input)²⁵⁵, to generate images based only on text inputs, relying on the author ability to accurately describe the image content and style (text to image)²⁵⁶, or to completely generate new data based on a previously learned pattern, such as in the example of Nvidia’s neural network which was

²⁵³ 2017, Tero Karras, Research Scientist at NVIDIA Research, “Progressive Growing of GANs for Improved Quality, Stability, and Variation”, conference paper at ICLR 2018 (Karras, et al. 2018)

²⁵⁴ One example is GoArt, an excellent AI image generator owned by Fotor, helping you create amazing artworks from text and photo easily. Online source: <https://goartwebapi.fotor.com> (accessed 04.01.2024). The image style transfer procedure is also detailed in “Artificial Intelligence for Art Creation with Image Style” by Jinglun Shi (Shi 2023)

²⁵⁵ A consistent article about creating realistic images from basic sketches is “DeepFaceDrawing: Deep Generation of Face Images from Sketches”, published in 2020 (Chen, et al. 2020)

²⁵⁶ Text-to-image is a very popular AI algorithm, with dozens of public websites and platforms where everyone can test it’s capabilities (Bing Image Creator, built on Dall-E, Midjourney, Fotor, Crayion, ArtSmart, Playground, Artbreeder etc)

trained on videos of cities to create/simulate entirely artificial urban environment (synthetic data generation) (Andrews 2021)²⁵⁷.

4. Artificial intelligence in artistic research

Within the specific forms of artistic research that use artificial intelligence, we observe the blurring of boundaries and the hybridization of classical research methods, where systemic and scientific methodology intersects with the processes specific to artistic research methodology. The scientific approach involves observation, hypothesis formation, experimentation, testing (verification of predictions through falsifiability), formulation of scientific propositions (theses), and eventually the creation of a paradigm (through theorizing).

Additionally, the artistic approach would be based on perception (of objects, events, circumstances), affective-cognitive involvement, imagination, anamnesis, conceptualization, traversing or intersecting territories and references, following models of action (“hoarding” – the model of obsessive data accumulation (Thorpe, Bolster and Neave 2019), “haunting” – the haunting of specters as signs (Lorek-Jezińska and Więckowska 2017), “network thinking” – Actor-Network Theory (ANT)²⁵⁸, spherical, layered thinking structures, spatial thinking, etc.), creating conditions for interaction, and public communication (through exposure, publication, performance, etc.)

Various types of artistic research are worth noting, which can be expanded upon according to the model offered by Christopher Frayling, namely research *into* art, *through* art, and *for* art (Frayling 1993, 5). Research *into* art provides an interpretative perspective, a reflective approach carried out from a distance, without immersion in the field of actual artistic practice. The assumed theoretical distance is achieved through tools such as historical studies, critical studies, curatorial studies, etc. It involves projecting concepts and considerations onto the body of studies, judged from outside the phenomenon.

Research *through* art offers an instrumentalist perspective, assuming an investigation into the technologies, mediums, and tools of art production. It involves immersion in the productive field of the creation mechanism, where creative methods become the subject of research: how it is done, in what manner, how it is produced, how it functions, what internal mechanisms are at play, etc. It is an interdisciplinary research area that introduces a professional perspective (from within the practice) as a means of research.

Research *for* art brings into discussion the creative, performative perspective, being a research solution in which artistic creation itself becomes the engine of specialized research, following the systemic steps of research based on a scientific model with the identification of a thematic object/subject, the application of a methodology, the construction of a context for action and communication, and the obtaining of results/products of research, with their interpretation and the definition

²⁵⁷ “Synthetic data generated from computer simulations or algorithms provides an inexpensive alternative to real-world data that’s increasingly used to create accurate AI models.” Online source: <https://blogs.nvidia.com/blog/what-is-synthetic-data/>. (accessed 04.01.2024)

²⁵⁸ As proposed by French philosopher Bruno Latour, Actor-Network Theory (ANT) assumes that everything exists in a network of interactive relationships (including people, technology, and non-living or inanimate objects). (Latour 1996)

of conclusions for the entire process. It is the type of research proposed by authentic artistic practice.

AI is also present when discussing the specific products of artistic research, starting from articles in specialized journals and magazines, in the writing of which AI-based tools facilitate the generation of text and content; the actual creation of artworks or artistic structures that use AI through the transfer of conceptual or formal capital; listing dedicated manifestations – exhibitions, fairs, AI art biennials, festivals²⁵⁹; publications such as books, readers, magazines, newspapers, with image resources or even entire formats generated with the help of AI (PPTs, illustrations, manga); the didactic or educational research projects, where identifying alternative educational technologies and patterns became more and more popular, based on interactivity, alternative education, and integrating AI into the educational process (Sudha, Prasad and Ramakrishna 2023).

5. AI between discursive legitimation and artistic artifactuality

Most of the public interaction with artificial intelligence-powered tools is limited to specific images for social media (for the public), given the widespread accessibility of AI engines. Contemporary art consumers, on the other hand, closely follow the significant directions in which art borrows the capabilities of artificial intelligence to create artistic, meaningful, and expressive content. From the outset, the clear distinction we can make is that artificial intelligence is a tool. A tool, a resource, and not an author. Its use does not require specific knowledge related to the mastery of traditional artistic mediums, but the validation and realization of high-quality art pieces demand valid and mature artistic intelligence, from its human author.

Scott Eaton, a London-based artist and creative technologist which explores the representation of the human figure through different artistic medium (drawing, digital sculpture, photography), also approached generative AI for his recent artistic research and practice²⁶⁰. His *Hyperbolic Composition* or *Humanity (Fall of the Damned)* works are combining hand drawing and moving studies with the capabilities of various neural networks. His experiments are targeting the specific expressivity of the human body, shape and geometry of motion, and his works can vary in form and format, ranging from digital sculptures to 2D images, anatomical illustrations, and even animations.

In an analogous manner, Ben Snell's artistic projects focus on exploring computing power as the “raw material of our time”. In this regard, he is using technology as a mirror to reveal the “human self as a computational being”, creating drawings, photography, and sculpture artworks. In his *Inheritance* or *Dio* series, marking references to the statuary expressiveness of classical sculptures, formally synthesized by AI algorithms, the author dismantles computers and integrates their substance into sculptural pieces, completing a loop of human creativity completed

²⁵⁹ Examples of international festivals where AI is present are Ars Electronica Festival, RADAR New Media Art, Hong Kong's Digital Art Fair, Dubai Art Fair, or the event AI Surrealism: The World's Largest AI Art Exhibition from NYC, 2023. Online source: <https://foundation.app/world/ai-surrealism?tab=home> (accessed 2024.01.04)

²⁶⁰ Examples of Scott Eaton's projects can be see on the author website: <https://www.scott-eaton.com/category/creative-ai> (accessed 2024.01.06)

through technology²⁶¹.

An example of conceptualized use of (the idea of) artificial intelligence is found in Lauren McCarthy's artistic projects. Based in Los Angeles, McCarthy explores the problematic of human identity and interactions within the concept of life automation. In 2018, she started the project named LAUREN, aiming to supply a creative and humane alternative to Amazon's Alexa. In this participatory initiative, McCarthy installs an array of smart devices (cameras, microphones, switches, door locks, faucets, and other electronic gadgets), into the homes of selected individuals. She remotely observes them 24/7, taking on the role of a “human intelligence” overseeing their homes.

The goal is to surpass the capabilities of artificial intelligence by infusing a human touch—understanding each participant as an individual, adapting to their needs. The dynamic between the artist and the participating subjects exists in the ambiguous space between human-machine and human-human interactions. Seen as a contemplation on the concept of the smart home and smart living, the project delves into discussions surrounding intimacy versus privacy, comfort versus autonomy, and addresses the evolving role of human labor in the future of automation²⁶².

An award-winning AI Artist who builds, codes and experiments with robots that paint is Pindar Van Arman. His renowned creation is the Cloud Painter, a sophisticated robotic artist capable of painting various works of art. While we can argue that his projects serve as a bridge between traditional art mediums²⁶³ and the creative abilities of AI, the Cloud Painter evolves, memorizes earlier works, and progresses, being trained to paint based on specific algorithms such as style transfer and neural knowledge, as previously outlined.

Although a similar outcome can be also find in Mario Klingemann's work “Memories of Passersby”²⁶⁴ from 2018, where a computer system hidden inside of an old-looking piece of furniture, generates in real time, using neural networks model, portraits of male and female persons in the same style as the grandmasters of west-European painting, Van Arman's robot also relates to the physicality of the gestural painting act, rather than just building digital versions of images, reversing the paradigm of the mechanical image and the continuously replicating electronic image today.

6. Conclusions

The evolutionary presence of artificial intelligence in art primarily questions the relationship between artistic creativity (previously assumed to be human) and technological factuality (a benchmark for the appropriative excellence of artistic

²⁶¹ Ben Snell is a New York-based artist with a practice that investigates the materialities and the ecologies of computation. Online source <http://bensnell.io/inheritance-ii/> (accessed 2024.01.05)

²⁶² The first project was continued in 2019 with SOMEONE, where four participant homes around USA took part in a similar experiment, while the 205 Hudson Gallery in NYC housed the command center where visitors could watch over them, and remotely control their networked devices. Online source: <https://lauren-mccarthy.com/SOMEONE> (accessed 2024.01.06)

²⁶³ The relation between traditional and new media was discussed in the 2021 article. (Soreanu, *New Media Art: Aligning Artistic Creativity And Technological Media* 2021)

²⁶⁴ Mario Klingemann is a leading pioneer in the AI art movement. More information on <https://quasimondo.com/> (accessed 2024.09.01)

mediums). Today, creativity and technology converge, defining a creativity that arises from within the technological environment. The result is a form of art stripped of artifactuality, in which representational stakes transcend the boundaries of the artistic definition thus far: object, concept, representation, idea, etc.

The recoil effect, as a direct consequence of the presence of artificial intelligence creativity in art, is the return to authentic human creativity in art. Redefining the concept of image in art is necessary, in a form that encompasses new forms of expression (the image as document, as evidence or fact, as work of art etc.), doubled by a new aesthetic formula, one that engages in a dialogue with AI art, with new specific languages, and with the new instances of authorship.

References

1. Alquier, Pierre, (2022), *Approximate Bayesian Inference*. Edited by Pierre Alquier. Basel: MDPI Books. doi:10.3390/books978-3-0365-3790-0
2. Andrews, Gerard, (2021), *What Is Synthetic Data?*, "nvidia.com 08 June". Accessed 01 04, 2024. <https://blogs.nvidia.com/blog/what-is-synthetic-data/>
3. Chen, Shu-Yu, Wanchao Su, Lin Gao, Shihong Xia, and Hongbo Fu, (2020), *DeepFaceDrawing: deep generation of face images from sketches*, „ACM Transactions on Graphics” 39 (4): 72:1–72:16. doi:10.1145/3386569.3392386.
4. Christie's, (2018), *Is artificial intelligence set to become art's next medium?* 18 12. Accessed 01 02, 2024. <https://www.christies.com/en/stories/a-collaboration-between-two-artists-one-human-one-a-machine> 0cd01f4e232f4279a525a446d60d4cd1
5. Frayling, Christopher, (1993), *Research in art and design*, "Research Papers" 1 (1)
6. ImageNet, (2017), *ImageNet Large Scale Visual Recognition Challenge (ILSVRC)*. Accessed 01 02, 2024. <https://image-net.org/challenges/LSVRC/>
7. Karras, Tero, Timo, Aila, Samuli, Laine, and Jaakko, Lehtinen, (2018), *Progressive Growing of GANs for Improved Quality, Stability, and Variation*, "International Conference on Learning Representations". ICLR
8. Latour, Bruno, (1996), *On actor-network theory: A few clarifications*, "Soziale Welt 47 (4)": 369-381. <https://www.jstor.org/stable/40878163>
9. Lorek-Jezińska, Edyta, and Katarzyna, Więckowska, (2017), *Hauntology and Cognition: Questions of Knowledge, Pasts and Futures*, "Theoria et Historia Scientiarum" 14 (7): 8-23. doi:10.12775/ths.2017.001
10. Manovich, Lev, (2001), *The Language of New Media*. Massachusetts: The MIT Press
11. Samuel, Arthur, (2000), *Some studies in machine learning using the game of checkers*. "IBM Journal of Research and Development (IBM)" 206-226. doi:10.1147/rd.441.0206
12. Shi, Jinglun, (2023), *Artificial Intelligence for Art Creation with Image Style*. "Highlights in Science, Engineering and Technology" 44: 67-74. doi:10.54097/hset.v44i.7198
13. Soreanu, Catalin (2021), *New Media Art: Aligning Artistic Creativity And Technological Media*. Edited by Eugenia Maria Pasca, "Review of Artistic Education" (Artes) (22): 206-216. doi:10.2478/rae-2021-0026
14. Sudha, R. G. N. R. Prasad, and K. Ramakrishna, (2023), *Education*

Technologies Based on Artificial Intelligence. “Proceedings of the 2nd International Conference on Cognitive and Intelligent Computing”. Singapore: Springer. 227–234. doi:10.1007/978-981-99-2746-3_24

15. Thorpe, Susan, Alexander, Bolster, and Nick, Neave, (2019), *Exploring aspects of the cognitive behavioural model of physical hoarding in relation to digital hoarding behaviours*. “DIGITAL HEALTH” 5 (January-December): 1-8. doi:<https://doi.org/10.1177/2055207619882172>