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Enclosing or Democratising the AI Artwork World

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Introduction

Artificial intelligence (AI)-enabled prediction algorithms create multiple challenges to existing ideas about human agency and how the results of this agency may be governed. Weak or absent transparency in the operation of computational systems is changing the meaning of individual autonomy as AI enables vast numbers of new capabilities previously designed and implemented by humans.¹ The prevailing wisdom is that AI innovation is best driven by commercial market incentives. Investment in refining AI-inspired commercial strategies and techniques that are less and less susceptible to external (and even internal) control or oversight is central to futuristic visions of data-enabled societies. Among the many sectors entangled with AI innovation is the art world.

Hodge SCJ defines AIs as ‘computer systems able to perform tasks which traditionally have required human intelligence or tasks whose completion is beyond human intelligence’.² Computational technologies having this ability include machine learning, neural networks and predictive algorithms. When employed to create artefacts perceived as art, the resulting AI-assisted and AI-generated artworks are viewed either as a destabilising threat to the traditional art world or as an opening up of opportunities for new forms of expression. At present, AI art is principally the domain of

¹ Nick Couldry and Ulises A Mejias, *The Costs of Connection: How Data Is Colonizing Human Life and Appropriating It for Capitalism* (Stanford University Press 2019); Robin Mansell and W Edward Steinmueller, *Advanced Introduction to Platform Economics* (Edward Elgar Publishing 2020); Shoshana Zuboff, *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power* (Profile Books 2019).

² Lord Hodge, ‘The Potential and Perils of Financial Technology: Can the Law Adapt to Cope?’ (The First Edinburgh FinTech Law lecture, 14 March 2019) <<https://www.supremecourt.uk/docs/speech-190314.pdf>> accessed 8 June 2021.

computer science expertise and its AI component is mainly being driven by incentives in the commercial marketplace.

The agency to produce AI art has been harnessed to a commercial yoke. Is this an inevitable or desirable state of affairs? This paper examines the scope for ensuring that the expansion of AI in the art world does not lead to the enclosure of all these new forms of artworks in the commercial realm. It explores whether and how digitisation and computational advance can help to democratise art, opening rather than enclosing the artistic commons.³

The (short) commercial history of AI art

Google used its DeepDream neural network to classify artworks in 2015 and observed the potential for this AI system to be used to remix visual images. When the system was shared feely with artists, experimentation began. This led to a gallery showing of DeepDream-inspired artworks in 2016 at Gray Area, a San Francisco gallery and arts foundation. Artbreeder followed soon after as an open collaborative platform, with users making some 127 million AI-generated works at this writing.

Although computerisation in the artworld was not new, it has been attracting increasing attention. AI art entered the market with a Christie's sale in 2018 of an AI-assisted portrait of a fictional character, Edmond de Belamy. Obvious, a Paris-based art collective, trained an algorithm to generate the AI artwork, but the algorithm itself had been created by Robbie Barret and downloaded from an open source platform. Initially valued at USD 10k, the artwork was auctioned for USD 432k, a premium achieved by being the first time such an artwork had entered the commercial market. It was created using a Generative Adversarial Network (GAN)—an AI system that uses neural networks to produce a generator and a discerner image, the former developing new output images and the latter testing these against training data to see if they comply with patterns found in that data. In the de Belamy case, the algorithms were trained on WikiArt repositories of paintings. Obvious made the decisions to select, print and market the image and the company received the proceeds with no payment being made to the developer of the AI system.⁴

³ Lawrence Lessig, *The Future of Ideas: The Fate of the Commons in a Connected World* (Random House 2001); James Boyle, 'The Second Enclosure Movement and the Construction of the Public Domain' (2003) 1 *Law and Contemporary Problems* 33; David Bollier and Silke Helfrich (eds), *The Wealth of the Commons: A World Beyond Market & State* (The Commons Strategy Group 2012).

⁴ Ziv Epstein, Sydney Levine, David G Rand, and Iyad Rahwan, 'Who Gets Credit for AI-Generated Art?' (2020) 23 *iScience* <[https://www.cell.com/iscience/pdf/S2589-0042\(20\)30707-0.pdf](https://www.cell.com/iscience/pdf/S2589-0042(20)30707-0.pdf)>.

There has been continuing interest in AI art in the art market albeit attracting less spectacular prices. A later Sotheby's auction yielded USD 20k for another portrait in the Belamy series. Obvious also created Japanese-style landscapes and portraits using GAN. These were then worked on by a human artist using Japanese woodblock techniques to create African face masks which sold for USD 13k. Obvious employees have little or no art training yet the works have been exhibited at art museums around the world. Another collaborative artwork—Commune with—was created by the artist Doomin with the Imagine AI system of the startup Pulse9. This was presented at Art Together, a purchasing platform for Korean art, raising some USD 17k.

An exhibition of Faceless Portraits Transcending Time prints was a collaboration between an AI-enabled algorithm system—AICAN, or Artificial Intelligence Creative Adversarial Network—and Ahmed Elgammal, a computer scientist at Rutgers University who directs its Art and Artificial Intelligence Laboratory. These works were shown at the HG Contemporary Gallery in New York with prints being sold for between USD 6k and 18k.⁵ In late 2018, the Nature Morte art gallery based in New Delhi mounted a show, Gradient Descent, featuring artworks created entirely by AI. Numerous additional examples of semi-autonomous (supervised) or autonomous (unsupervised) AI-inspired works could be cited.

In many cases, the main labour involved is downloading an algorithm, using a training data set and then, in some instances, augmenting the outputs. The commercial orientation of AI developments is indicated by the fact that AICAN was developed by Elgammal's start-up company, Artrendex. Creating art was in fact a sidebar to the interest of the company whose principal ambition is to succeed in the market for authenticating and cataloguing artworks using blockchain and other technologies. It uses Instagram data to assess prices for traditional artworks and has invested some USD 2.4m in its AI technology attracted from Menlo California-based Khosla Ventures.⁶ From this interest came the artworks, led by ambitions for technology innovation and for profiting from commercial applications of the technology.

⁵ Alexandra Oduber, 'AICAN: Faceless Portraits Transcending Time' (*Medium*, 19 October 2019) <<https://medium.com/lotus-fruit/aican-faceless-portraits-transcending-time-89ea045f3811>>.

⁶ Ian Bogost, 'The AI-Art Gold Rush is Here', (*The Atlantic*, 6 March 2019) <<https://www.theatlantic.com/technology/archive/2019/03/ai-created-art-invades-chelsea-gallery-scene/584134/>>.

AI art can involve artists and computer scientists and it is they who make choices about initial AI programming and about which training datasets to use. AI can assist in artwork creation or generate artworks, but it is still humans who decide whether to place a work on the market.

Is art necessarily commerce?

Regardless of provenance, artefacts perceived as art garner commercial value. The creation of such artefacts does not necessarily stem from commercial motives. Art is linked to 'expression' of imagination, craft and skill, each of which can be pursued for their intrinsic reward to the practitioner.⁷ For example, Shaker furniture was designed in accordance with the 18th Century religious movement's principles and then commodified as a by-product of devotional practice, later becoming iconic museum and collector items.⁸ Similarly, Buddhist ritualistic or 'auratic mode of existence' imagery is created as artefacts that are materialised as artworks for sale in the art market.⁹ Other artists pursue craft or skill in representation or reflection for their own sake, only later commodifying it to pay the rent.

The act of commodification occurs when artefacts regardless of their provenance become property. From property, it is a short step to commodification, but artwork creators may be motivated to contribute their works to an open artistic commons. Thus, even if the commercial value in the nascent AI art market is uncertain, there is a need for a policy response to determine who should benefit monetarily from the labour involved in the creation of these works. The global commercial art and antiques market was valued at USD 50.1bn in 2020, down 22 per cent on 2019 with online sales reaching USD 12.4bn or 25 per cent of total market value because of a pandemic-enforced shift to an online art market.¹⁰ The art market contributes substantially to the creative industry economy and it seems likely that, in time, new forms of AI art will acquire a more substantial art market presence.

⁷ Richard Sennett, *The Culture of the New Capitalism* (Yale University Press 2006)

⁸ Stephen Bove and Peter Richmond, *Selling Shaker: The Commodification of Shaker Design in the Twentieth Century* (Liverpool University Press 2006).

⁹ Walter Benjamin, 'The Work of Art in the Age of Mechanical Reproduction' (first published 1935) in Hannah Arendt (ed), *Illuminations: Essays and Reflections - Walter Benjamin* (Harry Zohn tr, Schocken Books 1969) 224 (as cited in Trine Brox, 'The Aura of Buddhist Material Objects in the Age of Mass-Production' (2019) 20 *Journal of Global Buddhism* 105).

¹⁰ Clare McAndrew, *The Art Market 2021* (Art Basel and UBS Report 2021)

<https://d2u3kfw92fzu7.cloudfront.net/The_Art_Market_2021.pdf>

AI systems rely on much more than the passive use of data raising questions about human creativity and autonomy and about who or what should be rewarded for the fruits of digital labour. In the 1950s, the AI aspiration was to discover whether characteristics of human intelligence such as learning, problem solving and heuristic formation could be simulated convincingly using computer hardware and software. With a few exceptions, 'general AI' had unimpressive outcomes although some continue to be sympathetic to the aim of reproducing human cognitive and rational capacities or 'intelligence'. Currently, it is 'narrow AI' systems which reproduce or mimic human behaviour that are commanding attention. Algorithms can be rules-based with finite, deterministic and effective steps for transforming data inputs into outputs, but today's AI systems involve discovering rules or patterns from training data autonomously. The outputs, in our case, artworks, may exceed or fall short of human expectations.

Large-scale investors in the science underlying AI and its commercial applications benefit from the availability of training datasets because this resource flows freely to them as the result of existing intellectual property ownership rules. This gives them a first-mover advantage in developing AI applications and it can reinforce their market power. Uncertainty associated with these systems is raising concerns about the 'originality' and provenance of artworks. As these machines and algorithms extend their reach into the artworld, new approaches to their governance and choices about how they are to be used will be needed. At present it is likely they will be taken by default by those seeking to benefit commercially from the development of AI systems. As in other sectors where AIs are becoming ubiquitous, their use is destabilising received wisdom about fairness. This is particularly evident in disagreements about who should be rewarded when an artwork is principally the result of machine 'labour'.

Having established that the fruits of AI labour can have commercial property value as commodities, the next question concerns the distribution of rewards for its creation.

The fruits of AI labour

Should the rewards of AI art production flow to the artist practitioner, the technologist, the creator, or the 'crowd'—that is, the users of digital art platforms who generate the data used to create artwork valuations employing data analytics? Much of the literature on reward is preoccupied with questions about what constitutes creativity. As Margaret Boden and Ernest Edmonds suggest, computer art is art 'for which the artists use programming, computer code, as a significant element

of their work'.¹¹ The use of code raises the question as to whether AI art is 'art' at all when aesthetic considerations are invoked.

The tendency to anthropomorphise technology-enabled artworks is widely recognised,¹² with evidence suggesting that people find it difficult to distinguish between AI-generated art and artworks created by humans.¹³ This increases the challenge of discerning authorship, ownership or even stable assessments of the aesthetics of AI artworks. Boden distinguishes among several types of 'AI creativity' defined as 'the ability to generate novel, and valuable, ideas': combinatorial—'unfamiliar combinations of familiar ideas'; exploratory—'resting on some culturally accepted style of thinking'; and transformational—'ideas ... that simply could not have been generated before'.¹⁴ However, these distinctions do not help us to decide whether an emergent artwork is or should be subject to individual protective rights.

Joseph Weizenbaum suggested that 'however intelligent machines may be made to be, there are some acts of thought that ought to be attempted only by humans', but neural networks and AI systems are rapidly rendering this an outmoded view.¹⁵ Some go so far as to suggest that if AI-generated artworks compete in the marketplace with those of human authors/creators, humans might cease creating. This suggests that incentives for creation should be provided by ensuring that intellectual property rights protect the interests of the computer programmer and/or the individual (scientist or artist) who instructs the AI. In opposition to this, however, it may also be argued that 'expanding the permissible uses of copyrighted works in machine learning helps engineers continue making advances in computer science and technology' and to advance AI art.¹⁶ As Joanna Zylińska puts it, 'art is always already emergent in—and with the world—and with the multiple technical apparatuses that shape the world'.¹⁷ In this view, questions about art aesthetics, originality and creativity are unlikely to be resolved easily insofar as they involve philosophical dilemmas about human/material world boundaries.

¹¹ Margaret A Boden and Ernest A Edmonds, *From Fingers to Digits* (MIT Press 2019) 3.

¹² Epstein, Levine, Rand, and Rahwan (n 4).

¹³ Harsha Gangadharbatla, 'The Role of AI Attribution Knowledge in the Evaluation of Artwork' (2021) 0(0) *Empirical Studies of the Arts* 1.

¹⁴ Margaret A Boden, 'Computer models of creativity' (2009) 30(3) *AI Magazine* 23, 24–25. <<https://ojs.aaai.org//index.php/aimagazine/article/view/2254>>.

¹⁵ Joseph Weizenbaum, *Computer Power and Human Reason: From Judgment to Calculation* (W H Freeman & Co. 1976) 76.

¹⁶ Jessica L Gillotte, 'Copyright Infringement in AI-Generated Artworks' (2020) 53(5) *UC Davis Law Review* 2657, 2691.

¹⁷ Joanna Zylińska, *AI Art: Machine Visions and Warped Dreams* (Open Humanities Press 2020) 65.

The need for a redesign of the intellectual property laws governing these artworks is, nevertheless, typically presented as hingeing on whether or not computers can be understood to be creative and, on this, there is no universal agreement.¹⁸ Zylinska asks instead, ‘in what way can the human be creative?’¹⁹ If a data processing machine or an algorithm is used to make an artwork, this does not necessarily imply that ‘authorship’ must be credited to restrict access through copyright (or patent) legislation. Foucault noted that in historical perspective notions of ‘authorship’ and ‘creativity’ have evolved through time.²⁰ New disruptions are occurring in the digitalisation age and they call for policy adjustments.²¹

Other inputs to the AI art production process

AI system innovation is disrupting existing intellectual property rights regimes that are intended to protect works based on an assessment of originality and, crucially, human creativity. In the case of AI art, it is difficult to trace the human actors involved in its creation. Applications of blockchain technology are being implemented to increase the transparency of traditional art markets by confirming the authenticity of works. Galleries and buyers can certify authenticity and track works from creation to sale using a digital chain of ownership receipts that confirm an artwork’s authorship. But for AI-generated artworks ambiguity remains since intellectual property laws (copyright and patent) insist that rights must adhere to a human creator.²²

In the United Kingdom, the United States and the European Union, definitions vary with regard to the definition of originality. Computer-generated works are eligible for copyright protection if they are ‘aided’, but when a work is generated by an AI system autonomously there is no ‘legal person’ to whom rights can adhere.²³ In the United Kingdom and a few other countries, copyright protection is available for ‘computer-generated works’ without a human creator, but because AI systems are

¹⁸ *ibid.*

¹⁹ *ibid* 55.

²⁰ Michel Foucault, ‘What is an Author?’ in James L Marsh and John D Caputo (eds), *Modernity and Its Discontents* (1st edn, Fordham University Press 1992) 299.

²¹ Lessig (n 3).

²² Deepak Somaya and Lav R Varshney, ‘Ownership Dilemmas in an Age of Creative Machines’ (2020) 36(2) *Issues in Science and Technology* 79.

²³ Emir Celik, ‘How IP Struggles to Define AI-Generated Products and the Ownership Dilemma’ (LLM in Commercial Law Dissertation, City, University of London 2020) <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3763885>.

deemed to lack creativity, they do not warrant protection. In the European Union, sui generis or exclusive ownership rights apply to databases, but there must be evidence of originality.

Policy is evolving gradually. For example, the European Union's White Paper on AI stresses the need for a human-centric evolution of AI with its outputs overseen by humans and with respect for European values including a fair distribution of rewards from innovation.²⁴ But the situation is unsettled. A European Parliament report on intellectual property rights and AIs argues that intellectual property rights issues must be addressed to ensure the growth and competitiveness of the European data economy.²⁵ It takes the view that such rights must be linked to the 'natural or legal persons that created the work'. Israel Cedillo-Lazcano suggests that AI 'paternity rights' might be applied only in cases when a commercial entity (gallery, auction house, art dealer) is involved in a transaction with rights adhering to a company (or individual) that either developed the AI system that created an AI artwork or to those who decided to put it up for sale.²⁶ The World Intellectual Property Organisation is consulting on these issues and seems to be emphasising the need for an intellectual property regime retaining the link to human action.²⁷ The policy dilemma is set out this way.

If AI-generated works were excluded from eligibility for copyright protection, the copyright system would be seen as an instrument for encouraging and favoring the dignity of human creativity over machine creativity. If copyright protection were accorded to AI-generated works, the copyright system would tend to be seen as an instrument favoring the availability for the consumer of the largest number of creative works and of placing an equal value on human and machine creativity.²⁸

²⁴ European Commission, *On Artificial Intelligence: A European Approach to Excellence and Trust* (White Paper) COM (2020) 65 final <https://ec.europa.eu/info/sites/info/files/commission-white-paper-artificial-intelligence-feb2020_en.pdf>.

²⁵ European Parliament, *Report on Intellectual Property Rights for the Development of Artificial Intelligence Technologies* (2020/2015(INI)) <https://www.europarl.europa.eu/doceo/document/A-9-2020-0176_EN.html>.

²⁶ Israel Cedillo-Lazcano, 'AI©R' (2020) 34(2) *International Review of Law, Computers & Technology* 201.

²⁷ WIPO, 'WIPO Director General Opens WIPO Conversation on IP and AI: Third Session' (4 November 2020) <https://www.wipo.int/about-wipo/en/dg_tang/news/2020/news_0014.html>.

²⁸ WIPO Secretariat, *Revised Issues Paper on Intellectual Property Policy and Artificial Intelligence* (WIPO/IP/AI/2/GE/20/1 REV, 2020) <https://www.wipo.int/edocs/mdocs/mdocs/en/wipo_ip_ai_2_ge_20/wipo_ip_ai_2_ge_20_1_rev.pdf>.

As these deliberations about changes in AI artwork governance unfold, they may be superseded by national initiatives. In January 2020, a Chinese court assigned copyright to an AI. Tencent's 'Dreamwriter' generates articles and the court found that these have a 'certain originality', awarding ownership to Tencent enabling it to benefit from the outputs of its AI system.²⁹

Enclosing or opening the commons?

In contrast to this approach to enclosing AI outputs within the traditional copyright intellectual property regime, Aaron Hertzmann suggests that AI-generated artworks should be treated similarly to open source software so as to maximise open sharing.³⁰ In this way they can be treated as contributions to commons-based activity.³¹ Open software communities have developed rules governing software code and how credit should be allocated with varying protections ranging from those attached to free code distribution and commercial sale. Websites like Artbreeder or Ganbreeder might, therefore, create rules in a similar way for artistic authorship and for attribution of credit as well as for how credit for a work should be claimed and whether or not a work can be sold.

Patrick Zurth argues that any case for the enclosure of AI artworks within an intellectual property rights regime should be based on evidence that this is needed to generate economic benefit.³² The art market for AI-generated artworks is a nascent one. It would seem that if the social goal is to maximise the potential for experimentation with AI artworks as a way of augmenting the human senses, generating new imaginings, and representing the world in new ways, then full enclosure of this emergent artworld is antithetical to that goal. How, for instance, would experimentation operate if the use of pre-existing works as AI training data required the consent of the 'author'? In

²⁹ Andres Guadamuz, 'Chinese Court Rules That AI Article Has Copyright' (*Justice*, 22 January 2020) <<http://infojustice.org/archives/41972>>.

³⁰ Aaron Hertzmann, 'If AI is used to create art, who gets the credit?' (*World Economic Forum*, 14 March 2019) <<https://www.weforum.org/agenda/2019/03/new-ai-art-has-artists-collaborators-wondering-who-gets-the-credit>>.

³¹ Rachel Breen, 'Towards a Collective Understanding of Art as a Commons' (*On the Commons*, 26 November 2008) <<http://www.onthecommons.org/towards-collective-understanding-art-commons#sthash.jyAJiWap.dpbs>>.

³² Patrick Zurth, 'Artificial Creativity? A Case Against Copyright Protection for AI-Generated Works' (2021) 25(2) *UCLS Journal of Law & Technology* 1 <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3707651>.

support of a varied rights regime, Giovanni Sartor, Francesca Lagioia, and Giuseppe Contissa argue that such works should enjoy ‘computational’ or ‘data freedom’ to generate new works.³³

These issues extend beyond the art market into automated journalism, parodies of artworks, music and more. If AI art and other AI-enabled works are fully enclosed, given the substantial costs of developing AI systems, it is likely that large investors in AI will reap a disproportionate share of the benefits. To avoid this, there needs to be a clear delineation of ‘authorship’ and ownership rights without a singular default to the commodification of AI art. As in other areas of the digital ecology, larger digital companies are likely to dominate. Small entrepreneurial companies, software coders, and independent artists will find themselves without the opportunity to benefit monetarily from their creations unless action is taken to create an ownership regime that respects their interests.

This suggests the need for a tiered or differentiated system of ownership attribution to individual humans or corporate entities with the aim of tracking inputs and choices made by humans to enable the generation of an artwork, but also to maximise the space for experimentation in an open commons. This approach requires measures to sustain AI artwork production as is done for traditional artworks that are held in art museums relying on smaller or larger public subsidies, donations, crowdsourced voluntary contributions, or other forms of financial support for artists and creative practitioners.

Conclusion

A crucial challenge in the digital space is to imagine, implement and sustain alternatives to the private supply of digital products. Deliberations on novel governance approaches need to acknowledge that intensifying the competitive dynamic of the commercial AI art market will not always be consistent with individual and collective aspiration. Most current proposals for change in the governance of intellectual property in the AI art world seem to assume that near-exclusive private supply and commodification of AI-based outputs is optimal. However, this neglects the aspirations of artists seeking to contribute to an AI art collective commons.

³³ Giovanni Sartor, Francesca Lagioia, and Giuseppe Contissa, ‘The Use of Copyrighted Works by AI Systems: Art Works in the Data Mill’ (*SSRN*, 2018) <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3264742>.

If AI artworks, inspired by novel AI systems, are to yield fair and equitable outcomes, new norms and rules will be needed. These rules and norms need to be robust enough to decide when commercialization is appropriate and when alternative mechanisms are needed, acknowledging the diverse interests and motivations of AI art creators. Attention needs to be given to how to sustain experimentation in the public commons *adjacent* to the commercial art market. In short, the key issue is what balance is needed between private and public/collective AI art creation.

AI systems (including blockchain) are already being used to detect forgeries, classify art works, support Virtual Reality art exhibitions and develop art market analytics, with terms appearing such as AI art marketing, art-crypto-mining and art-blockchain-banking.³⁴ Without moves to create a sustainable space for experimentation and complementary activity in the commons, it seems that the marketisation of AI artworks will proceed rapidly, reducing the scope for ‘creativity’ and for the democratisation of art. It is not only new technologies that reshape our imaginings of what art is and who has access to it. It is the decisions taken in the political sphere of policy and in the marketplace about ownership rights and who qualifies as deserving of rewards from both human and AI ‘labour’.

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³⁴ Babek Saleh and Ahmed Elgammal, ‘Large-Scale Classification of Fine-Art Paintings: Learning the Right Metric on the Right Feature’ (2015) <arxiv:abs/1505.00855>.