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AI TRENDS IN IP: ARE MACHINES THE NEW AUTHORS?

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Abstract

GAN and related ML systems have branched out from brute force computation to cultural productions like the Next Rembrandt. Scepticism is rife about possible consequences of AI transforming into an automated artisan. This apprehension ignites cross-sectoral debates on the emergence of 'machine autonomy'. Until AI's status as conscientious participant in human society remains muddled, AI-generated works may not clearly fall into a protectable copyright niche. This paper provides a harmonised view amongst a scholarship polarised between choosing 'humans or machines'. We argue that the correct perspective is 'humans behind the machines'. Human contribution, as much as is required by copyright law, is not difficult to identify in complex generative works. The upstream and downstream uses are not infringements ipso facto. Concerns for rights violation in data use and allocation of ownership can be resolved by adopting more legislative clarity. The benefits of permitting and protecting emergent works outweigh the mistrust and assumptions, that borne from the AI Knowledge Gap, caution against facilitation of AI-assisted creativity. AI is helping professionals amplify their creative expression and is steadily becoming more accessible for common use. A pragmatic, technologically-agnostic interdisciplinary approach can pave the way for pluralistic dimensions of authorship, originality and ownership in place of existing procrustean standards.

Keywords: Artificial Intelligence, Automation, Ownership, Balance of Rights, AI-assisted Works.

1. Introduction

In ancient times, Aristotle envisaged new instruments of production that would, of their own accord, compose and perform music and weave new textiles.[1] Roald Dahl created a similar idea with his elaborate typewriters in "The Great Automatic

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[1] C. Craig and I. Kerr, "The Death of the AI Author", Osgoode Legal Studies Research Paper (March 25, 2019), *available at*: https://ssrn.com/abstract=3374951 (last visited on March 30, 2022).

Grammatizator".[2] Fictional laws governing artificial intelligence premise the works of Isaac Asimov.[3] While the storied ambit of science fiction continues to evolve, scientists working on artificial intelligence (AI) are transmuting theoretical concepts into practical applications.

One might expect that visual arts would be the last thing computers could be good at, as they are abstract, expressive of one's personality, and tied to an individual culture and psychology.[4] However, a collaborative project between ING, TU Delft, Mauritshuis Museum & Microsoft has produced 'The Next Rembrandt'[5]. We look at the story behind the painting that has won over 60 advertising awards.[6]

The team designed deep learning algorithms to upscale 346 high-resolution scans of Rembrandt paintings. This followed a tedious demographic and anatomical study to arrange final selections as "a portrait of a Caucasian male with facial hair, between the ages of thirty and forty, wearing black clothes with a white collar and a hat, facing to the right."[7] "An algorithm measured the distances between the facial features in Rembrandt's paintings and calculated them based on percentages. Next, the features were transformed, rotated, and scaled, then accurately placed within the frame of the face. Finally, we rendered the light based on gathered data in order to cast authentic shadows on each feature."[8] Same procedure was followed to calculate and create height maps from UV-based paint that gave the painting a 3-D effect. Over 500 hours of processing rendered 150 gigabytes of data that resulted in a new painting bearing resemblance to the works of the old master.

This was unique for not only the output that was generated but also because of how clearly it highlighted the human-machine link. The non-human creator is created by human creators, but the work created by the non-human agent is not directly created by

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2 R. Dahl, *The Great Automatic Grammatizator and Other Stories* (Viking, London, 1996).
3 I. Asimov, *I. Robot* (Fawcett Publications, Greenwich,1950).
4 K. Hristov, "Artificial Intelligence and the Copyright Dilemma", 57 (3) *IDEA The Journal of the Franklin Pierce Center for Intellectual Property* 431 (2017).
5 Superhero Cheesecake, "The Next Rembrandt", *available at*: https://www.nextrembrandt.com/ (last visited on February 22, 2022).
6 Dutch Digital Design, "The Next Rembrandt: Bringing the Old Master Back to Life", *Medium*, Jan. 24, 2018 *available at*: https://medium.com/@DutchDigital/the-next-rembrandt-bringing-the-old-master-back-to-life-35dfb1653597 (last visited on February 22, 2022).
7 *Supra* note 5.
8 *Ibid.*

the humans.[9] Albeit, the AI software (even though a self-learning algorithm) would not have produced an output without constant human inputs.

One scathing criticism of the Next Rembrandt project calls it "a horrible, tasteless, insensitive and soulless travesty of all that is creative in human nature", lacking "the emotional heft of a human original."[10] Perhaps we digress, but, Rembrandt may himself have appreciated "the mingled passion and haplessness of the ginned-up painting"[11]; given his own application of instruments like camera obscuras – nascent technologies at the time.[12]

Nevertheless, such critique opens us to pertinent questions in copyright's sphere. Is mapping data points from a large pool of public domain works a sufficiently creative endeavour? Can *substance* produced using AI technologies which can only mimic existing authorial *styles* be considered original? Are AI practitioners legally protected under fair use/fair dealing provisions to use other authors' works as training data corpus? Most pertinently, with the human link with work's creation now disturbed, who is the true author?

We map the effect of 'AI Knowledge Gap' on recent copyright scholarship and argue that legal perceptions are prematurely giving in to the provoked intrigue of pop-culture and publicised conceptions of the potential of Generative AI. To this effect, Part II contains a detailed exposition of AI and ML as relevant to copyright law. Part III delineates prevailing contradictions on machine authorship and offers a new theoretical basis grounded in post-structuralism. Part IV deals with issues of originality, creativity, copying and alleged market disruptions purported to be caused by AI-based works. Part V identifies probable owners to affix legal liability. Part VI is the conclusion. This study is restricted to current and expected state-of-the-art of AI; bearing in mind the incremental, not exponential, progress predicted by AI practitioners. The terms 'AI-based' and 'emergent works' are used interchangeably.

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[9] M. Coeckelbergh, "Can Machines Create Art?", 30 *Philosophy & Technology* 285 (2016).

[10] J. Jones, "The digital Rembrandt: a new way to mock art, made by fools", *The Guardian,* Apr. 6, 2016, *available at*: https://www.theguardian.com/artanddesign/jonathanjonesblog/2016/apr/06/digital-rembrandt-mock-art-fools (last visited on March 23, 2022)

[11] P. Schjeldahl, "A Few Words about the Faux Rembrandt", *The New Yorker,* Apr. 8, 2016, *available at*: https://www.newyorker.com/culture/culture-desk/a-few-words-about-the-faux-rembrandt (last visited on March 23, 2022)

[12] F. O'Neill and S. P. Corner, "Rembrandt's self-portraits", 18 *Journal of Optics* 6 (2016).

2. A Brief History of Automation

The co-inventor of telegraph, Charles Wheatstone, prompted Lady Ada King, Countess of Lovelace[13] and daughter of British poet Lord Byron to translate Luigi Menabrea's prior research on Babbage's Engines. In this anonymously published translation,[14] she added 7 new appendices proposing that beyond mathematical calculations, "the engine might compose elaborate and scientific pieces of music of any degree of complexity or extent".[15] This ingenuity made her the first computer programmer. Lovelace also possessed a keen forethought on public perception of machine automation:[16]

> It is desirable to guard against the possibility of exaggerated ideas that might arise as to the powers of the Analytical Engine… The Analytical Engine has no pretensions whatever to originate anything. It can do whatever we know how to order it to perform.

Nearly a century later, Alan Turing in his exceptionally celebrated paper[17], disagreed with "Lady Lovelace's Objection". He initiated the thought-process that would evolve into key concepts of AI; beginning with the most pertinent of questions, "Can machines think?" Turing's "thinking machine" does not possess any biological intelligence capabilities. We can map its *appearance* of intelligence through the 'Imitation Game', also known as the 'Turing Test'. If the interrogator who receives typewritten responses for same questions asked to a human and a machine cannot tell them apart for a majority of time, then the machine can be said to think like a human. Several watered-down versions of the test accommodate randomly surveyed public

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13 Computer History Museum, "A Brief History: Age of Machinery" in C. D. Green and C. Babbage, "The Analytical Engine, and the Possibility of a 19th Century Cognitive Science", in C.D. Green, M. Shore, *et.al.*, (Eds.) *The Transformation of Psychology: Influences of 19th-Century Philosophy, Technology, and Natural Science* (American Psychological Association, Washington, 2001), *available at*: https://www.computerhistory.org/babbage/history/ (last visited on Feb. 6, 2022).

14 L.F. Menabrea, "Article XXIX: Sketch of the Analytical Engine Invented by Charles Babbage Esquire", 3 *Scientific Memoirs* (1843), *available at*: https://repository.ou.edu/uuid/6235e086-c11a-56f6-b50d-1b1f5aaa3f5e#page/4/mode/2up (last visited on March 16, 2022).

15 *Ibid.*

16 *Ibid.* (emphasis in original).

17 A. M. Turing, "Computing Machinery and Intelligence", 49 *Mind* 433, 460 (1950).

opinion in place of the interrogator.[18] The general consensus is that the Turing Test still remains an elusive standard for AI experts to achieve.[19]

2.1. The Dartmouth Conference

At around the same time as Turing, certain scientists were contemplating a different but related question - can machines be creative? In the summer of 1956, the term "Artificial Intelligence" was officially framed at the 'Dartmouth Summer Research Project on Artificial Intelligence' (Dartmouth Conference). The proverbial 'father of AI', John McCarthy, described it as, "The science and engineering of making intelligent machines."[20] This Conference adopted the central aim, "…to proceed on the basis of the conjecture that every aspect of learning or any other feature of intelligence can in principle be so precisely described that a machine can be made to simulate it."[21]

This formally established AI as an interdisciplinary research area, attracting attention from avenues of psychology, art, computer science and neuroscience. Attention was called to increase computational power, develop natural language processing (NLP) and neural nets, cause computers to practice self-improvement, abstraction, randomness and creativity.

2.2. Neural Networks

Newell, Shaw and Simon;[22] also participants at Dartmouth and later recipients of the Turing Award in 1975 for their contributions to "artificial intelligence and the psychology of human cognition", expounded on new frontiers of neuropsychological 'emergent behaviour'. 'Emergence' is the "behaviour of an adaptive system which is a result of interaction of all its parts but cannot be displayed by any of the parts individually".

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18 S. Cascone, "AI-Generated Art Now Looks More Convincingly Human Than Work at Art Basel, Study Says", *Artnet*, July 11, 2017, *available at*: https://news.artnet.com/art-world/rutgers-artificial-intelligence-art-1019066 (last visited on Feb. 4, 2022).

19 "The Loebner Prize", *available at*: https://www.ocf.berkeley.edu/~arihuang/academic/research/loebner.html. (The Loebner Prize was designed to be granted to the first bot that broke the Test. It has since reduced its standards of entry and been analogised to a competition for "newspaper horoscopes and roadside psychics.")

20 J. McCarthy, "What is Artificial Intelligence?" *Stanford Law*, Nov. 12, 2007, *available at*: http://www-formal. stanford.edu/jmc/whatisai/ (last visited on Feb. 6, 2022).

21 J. McCarthy, M. Minsky, *et.al*., "A Proposal for the Dartmouth Summer Research Project on Artificial Intelligence", 27 *AI Magazine* 12–14 (1955).

22 A. Newell and H. A. Simon, "Computer Science as Emperical Inquiry: Symbols & Research", in M. Boden, *The Philosophy of Artificial Intelligence* (Oxford Press, New York, 1990).

The general notion of emergence is meant to conjoin these twin characteristics of dependence and autonomy.[23] For AI this "describes programs that produce outputs their programmers and users could not predict."[24] This focus on emergent behaviour and reducing areas of human intelligence to formal logic systems led directly to most of AI research for the next fifteen to twenty years.[25]

In the late-90s, following an AI-winter, computer science was prompted by the push of 'knowledge economy'. The next development of AI was influenced by advancements in neurobiology, notably theories of "connectionism"[26] from D.O. Hebb's "Hebbian theory"[27] which proved a directly proportional relation between increase in cognitive powers and number of synchronized neurons. Also influential was J.S. Bruner's work on "cognitivism"[28] that elaborated on adaptive neural models of learning and behavior. Frank Rosenblatt then constructed the first functioning single-layer neural network, "Perceptron"[29] that could classify basic inputs into two categories.

2.3. Machine Learning

Present-day AI research aims to construct "artificial neurons" designed after and to be as competent as their biological counterparts. This is most evident in AI sub-sets of machine learning (ML) and deep learning. ML was popularized in 1959 by Arthur Lee Samuel's brainchild, the 'Samuel Checkers-playing Program', world's first self-learning algorithm. He envisioned a field of study where, "Programming computers to learn from experience should eventually eliminate the need for much of this detailed programming effort."[30]

ML is conducted through multi-layered algorithms that comprise 'Artificial Neural Networks (ANNs)'. These networks are programmed to perform specific

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[23] "Emergent Properties", Stanford Encyclopedia of Philosophy (Aug. 10, 2020), *available at*: https://plato.stanford.edu/entries/properties-emergent/ (last visited on March 16, 2022).

[24] B. Boyden, "Emergent Works", 39 *The Columbia Journal of Law and the Arts* 377 (2016).

[25] "Killer Robots: AI & Ethics", *available at*: https://www.cs.swarthmore.edu/~eroberts/cs91/projects/ethics-of-ai/sec1_2.html (last visited on March 5, 2022).

[26] *Ibid*.

[27] D. Hebb, *The Organization of Behavior: A Neuropsychological Theory* (Wiley, New York, 1949).

[28] M. Boden, *Mind as a Machine: History of Cognitive Science* (Clarendon Press, Sussex, 2006).

[29] M. Leftkowitz, "Professor's perceptron paved the way for AI – 60 years too soon", *Cornell Chronicle* (Sept. 25, 2019), *available at*: https://news.cornell.edu/stories/2019/09/professors-perceptron-paved-way-ai-60-years-too-soon (last visited on Feb. 26, 2022).

[30] A.L. Samuel, "Some studies in machine learning using the game of checkers", 3(3) *IBM Journal of Research and Development*, 210-229 (1959).

functions on a corpus of input data to generate a desired output. Feedback mechanisms enable better predictions with increased use. Once these learning algorithms are fine-tuned for accuracy, they are powerful tools in computer science and artificial intelligence, allowing us to classify and cluster data at a high velocity.[31]

The initially successful models of AI to parameterize human cognitive methodology were knowledge-based systems (KBS) and expert systems. The two components i.e. a knowledge base which is a collection of facts and an inference engine which deduces information through if-then rules, are employed for high-scale problem solving. While expert systems, which are a subset within the broader genus of KBS rely on fetching pre-stored human expertise; KBS have become adept at harnessing Big Data and statistical pattern-finding in raw data.

Tom Mitchell's formula remains instructive to this day, "A computer program is said to learn from experience E with respect to some class of tasks T and performance measure P, if its performance at tasks in T, as measured by P, improves with experience E."[32] This learning occurs via three modes. 'Supervised learning' entails training ML algorithms to recognise patterns among pre-identified/labelled raw data. 'Unsupervised learning' or 'self-learning' occurs when raw data can be categorized without human intervention. 'Reinforcement learning' is initiated through feedback loops that ensure repetition of the learning processes until the required output is transmitted.

2.4. AI Applications

KBS systems have found a vast market in diagnostics, data interpretations, modelling painting methodologies, debugging and repairing computer systems. AI application has become imperative to development of self-driving cars, litigation prediction and legal search, predicting protein folding structures and generating graphics softwares. ML algorithms may also be trained specifically to generate cultural productions and participate in multi-player games. It is this interface that has motivated the conception of creative intelligence as an automated property of advanced algorithms.

When IBM's AI Watson defeated long-time 'Jeopardy!' champion Ken Jennings, many heralded it as AI's entry into advanced NLP. AlphaGo Zero defeated Lee

[31] IBM, Neural Networks, *available at*: https://www.ibm.com/cloud/learn/neural-networks (last visited on Feb. 17, 2022).

[32] T. M. Mitchell, *Machine learning* 870-877 (Burr Ridge, McGraw Hill, 1997).

Sedol, 18-time world champion by four rounds to one.[33] It was as Turing had predicted, "By observing the results of its own behaviour it can modify its own programmes so as to achieve some purpose more effectively."[34]

Motivated by Rosalind Pickard's work on Affective Computing,[35] more scientists are training AI to produce works that require emotional intelligence like poetry,[36] metaphors[37] and jokes.[38] Major attention is now on Open AI's new GPT-3,[39] an unsupervised GAN network which once stated among its hoard of outputs, "This is because I will be programmed by humans to pursue misguided human goals."

3. Mystic Authors and Mere Machines

Generative Adversarial Networks (GAN), developed by Ian Goodfellow *et.al.*,[40] is "a new framework for estimating generative models via an adversarial process, in which we simultaneously train two models: a generative model G that captures the data distribution, and a discriminative model D that estimates the probability that a sample came from the training data rather than G. The training procedure for G is to maximize the probability of D making a mistake." Once D stops making mistakes, it can combine data corpus to make new works.

Auction house Christie's sold GAN-artwork titled 'Portrait of Edmond Belamy' for $432,500.[41] AIVA is an AI music composer assistant trained on works of baroque masters and aids in creating emotional soundtracks.[42] In an unofficial Eurovision spin-off, the AI Song Contest, participants from across EU compete with AI-authored songs.[43]

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33 "AlphaGo", *available at*: https://deepmind.com/research/case-studies/alphago-the-story-so-far#alphago_zero (last visited on March 26, 2022).

34 *Supra* note 17.

35 R. Pickard, *Affective Computing* (MIT, MIT Press, 2000).

36 A. I. Miller, *The Artist in The Machine: The World of AI Powered Creativity* (the MIT Press, London, 2019).

37 *Ibid.*

38 "The Joking Computer", *available at*: http://joking.abdn.ac.uk/home.shtml (last visited on March 6, 2022).

39 "GPT-3 Powers the Next Generation of Apps", Open AI, *available at*: https://openai.com/blog/gpt-3-apps/ (last visited on Feb. 20, 2022).

40 I. Goodfellow, J. Pouget-Abadie, *et al.*, "Generative Adversarial Networks", *Neural Information Processing Systems* 2672 (2014).

41 Auction Review, "Is artificial intelligence set to become art's next medium?" *Christie's*, Dec. 12, 2018, *available at*: https://www.christies.com/features/A-collaboration-between-two-artists-one-human-one-a-machine-9332-1.aspx (last visited on March 14, 2022).

42 "AIVA", *available at*: https://www.aiva.ai/ (last visited on March 6, 2022).

43 "AI Song Contest 2021", *available at*: https://www.aisongcontest.com/ (last visited on March 14, 2022).

Ross Goodwin, former ghost-writer for President Obama, in a project sponsored by Google, fed his Char-RNN AI 20 million words in text corpora composed of fiction and poetry. He then ran the software on his laptop, constantly feeding it with images via webcam on a journey from New York to New Orleans. The AI translated that data into words and produced the first AI novel, '1 The Road'. Later, Goodwin collaborated with BAFTA-nominated filmmaker Oscar Sharp to make experimental sci-fi short films, 'Sunspring' and 'It's no Game'.[44]

Michael Mateas describes this as "expressive AI" which is "a new inter-discipline of Al-based cultural production, combining art practice and AI-research."[45] Philip Galanter has defined it as "generative art" which refers to "any art practice where the artist cedes control to a system that operates with a degree of relative autonomy, and contributes to or results in a completed work of art."[46] He further says, "The key element in generative art is then the system to which the artist cedes partial or total subsequent control." [47]

The element of control is evident in copyright law's conception of authorship which is tightly bound to and often presumes the presence of a subjective authorial intention. Copyright law is concerned that this authoritative control is not too evident in the case of emergent works. This part explores the theoretical justifications for authorship and argues that post-structuralist critique offers ample ground to include emergent works within copyrightable subject-matter. We will also review the events surrounding the auction of 'Portrait of Edmond Bellamy' to highlight romantic-anthropomorphic terminology's negative impact on legal scholarship.

3.1. Romanticism

The skill of an author in the beginning of Augustan literature till the mid-18th century, was to study and emulate semantics proffered by the likes of Ovid, Virgil, Horace, Homer and Socrates. The sentiment is expressed adequately by Alexander Pope, "Be Homer's works your study, and delight; Read them by day, and meditate by night"[48]

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44 "Ross Goodwin", *available at*: https://rossgoodwin.com/ (last visited on March 14, 2022).

45 M. Mateas, "Expressive AI: A Hybrid Art and Science Practice", 34 *Leonardo* 147 (2001).

46 P. Galanter, *Thoughts on Computational Creativity*, 6th Generative Art Conference (2003) *available at*: https://drops.dagstuhl.de/opus/volltexte/2009/2193/pdf/09291.GalanterPhilip.Paper.2193.pdf (last visited on March 18, 2022).

47 *Ibid.*

48 A. Pope, *An Essay On Criticism* 7 (W. Lewis, London, 1711).

and further, "Learn hence for ancient rules a just esteem; to copy nature is to copy them." Towards the end of the 18th century, romantics' emphasis on spontaneous personality overtook the systemic order of classical imitation.

For authors such as Keats, Shelley, Lord Byron and Wordsworth an ability to express horror, solitude, loss, melancholy and desire became paramount; not only as syntax but as a reflection of personal anguish with an emphasis on 'divine inspiration'. For creation of works, Wordsworth stressed the importance of imagination, "governed by, a sublime consciousness of *the soul* in her own mighty and almost *divine powers*"[49]. Herder expressed that true understanding of texts could only be gained through a study of the author himself, "The more one knows the author from life and has lived with him, the livelier this intercourse becomes."[50] Authors took on "the natural world as a living mirror to the soul."[51]

Simultaneously, the legal understanding of authorship began to evolve. *Pope* v. *Curll*[52] and *Gay* v. *Read*[53] represent landmark events noting transformation in status of literature as 'property'. Though the Statute of Anne was still "essentially a book seller's bill",[54] the dimension of author's ownership over the written word began to get credence in courts of law in subsequent cases like *Tonson* v. *Collins.*[55]

Mark Rose[56] notes the impact of *Donaldson* v. *Beckett*,[57] on propagation of Martha Woodmansee's[58] "author-genius". Booksellers view this as an opportunity to create a distinction between protections of works under copyright from those under patents. As the "writer" transmogrified into "an *author* (Lat. *Auctor*, originator, founder,

[49] W. Wordsworth, "Preface to Poems" (1815), Bartleby.com, *available at*: https://www.bartleby.com/39/38.html (last visited on March 14, 2022).
[50] J. G. V. Herder, "On the Cognition and Sensation of the Human Soul", in M. Forster (Ed.), *Herder: Philosophical Writings* (Cambridge University Press, Cambridge, 2002).
[51] M. Drabble, *The Oxford Companion to English Literature* 1228 (OUP, Oxford, 2000).
[52] (1741) 2 Atk. 342.
[53] (1729) NA 351/305.
[54] M. Rose, "The Author in Court: Pope v. Curll (1741)", 10 *Cardozo Arts & Entertainment Law Journal* 475 (1991).
[55] 96 ER 169 (1761).
[56] M. Rose, "The Author as Proprietor: Donaldson v. Becket and the Genealogy of Modern Authorship", 23 *Representations* 51 (1988).
[57] 1 ER 837 (1774).
[58] M. Woodmansee, "The Genius and the Copyright: Economic and Legal Conditions of the Emergence of the 'Author'", 17 *Eighteenth-Century Studies* 425, 429 (1984).

creator),"[59] the claim to property seemed naturally to follow.[60] The new dynamic permitted authors to exercise independence from patrons and sell works directly in open markets. However, this came at the cost of mystification of the true nature of creative processes.

3.2. Post-structuralism

Mark Rose explains how, "The gap between poststructuralist thought and the institution of copyright brings into view the historicity of the seemingly 'solid and fundamental unit of the author and the work.' "[61] Roland Barthes noted the problematic notion that, "The explanation of a work is always sought in the man or woman who produced it, as if it were always in the end, through the more or less transparent allegory of the fiction, the voice of a single person, the author 'confiding' in us."[62] Arguing against *author-ity*, Michel Foucault explains how, "We are used to thinking that the author is so different from all other men, and so transcendent with regard to all languages that, as soon as he speaks, meaning begins to proliferate, to proliferate indefinitely. The truth is quite the contrary…"[63]

For Derrida, signs, and consequently language, structure human consciousness; accordingly, there is no author who can claim to have created something wholly distinctive with the very language that structures his or her consciousness.[64] In his noted work *Limited Inc. a b c*, he forcefully argued how by acknowledging the contribution of others, John Searle as an author had himself become "divided, multiplied, conjugated, shared."[65]

Far from being secluded originations, works are a conglomeration of existing ideas and influences created as well as understood through constant social dialogue. This discourse is the Foucauldian *author-function*. Craig & Kerr expound on it through

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59 *Ibid.*
60 *Supra* note 1.
61 *Supra* note 54.
62 R. Barthes, "The Death of the Author," in S. Burke (ed.), *Authorship: From Plato to Postmodernism: A Reader* 125-130 (Edinburgh University Press, Edinburgh, 1995).
63 M. Foucault, "What Is an Author?", in J. Harari (ed.), *Textual Strategies: Perspectives in Post-Structuralist Criticism* (Cornell University Press, New York, 1979).
64 L.R. Danil, "Deconstructing Copyright", *Critical Legal Thinking*, *available at*: https://criticallegalthinking.com/2013/04/08/deconstructing-copyright/ (last visited on March 26, 2022).
65 J. Derrida, *Limited Inc.* (North Western University Press, Illinois, 1988).

Bakhtin's dialogic theory, "… authorship seeks to encourage precisely this discursive participation in the dialogic process of human interaction and the mutually constitutive creation and exchange of text, meaning, and identity."[66] An AI may regenerate Rene Magrite's pipe, but only social discourse will construct the significance of "*ceci n'est pas une pipe.*"

Barthes' *Death of the Author* eliminates the authoritative influence over the text and opens channels for heteroglossia, "The text is a tissue of quotations drawn from innumerable centres of culture."[67] Deconstruction of the author as monologic and work as his solitary product of genius allows the audience to view all the voices that preceded the work and contributed to its present form, as also the ones that will succeed it and add to it their own contributions.

Prof. Litman's famous critique stands its ground again, this time for emergent works, "The very act of authorship in any medium is more akin to translation and recombination than it is to creating Aphrodite from the foam of the sea."[68] In a non-technical sense, most works of art are derivative in that they either depict another work of art or an element of nature.[69] Search[70] and Mateas[71] conclude that copyright law should understand "the plasticity of the (AI) medium" and recognize it as a means of "establishing communication between author and audience".

3.3. The Doctrinal Mud[72]

Dr. Bridy[73] says, "… figure of the author as a 'writing machine' is about as radical a deconstruction of the figure of the romantic author as a good post-modernist could wish for, and it is arguably one whose time has come in the discourse on copyright

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66 S*upra* note 1.
67 *Supra* note 62.
68 J. Litman, "The Public Domain", 39 *Emory L.J.* 965 (1990).
69 S. Giry, "An Odd Bird", *Legal Affairs, available at*: https://www.legalaffairs.org/issues/September-October-2002/story_giry_sepoct2002.msp (last visited on Feb. 7, 2022).
70 P. Search, "Electronic Art and the Law: Intellectual Property Rights in Cyberspace", 32 *Leonardo* 191 (1999).
71 *Supra* note 45.
72 P. Samuelson, "Allocating Ownership Rights in Computer Generated Works", 47 *University of Pittsburgh Law Review* 1185, 1197 (1986).
73 A. Bridy, "Coding Creativity: Copyright and the Artificially Intelligent Author" 5 *Stanford Technology Law Review* 12 (2012).

law." Prof. Kaminsky notes, "It is harder to romanticize free expression as an essential output of human autonomy when machines can spew out news, poems, and op-eds." [74]

Yet, the sentiment that Foucault identified as "the privileged moment of individualisation" continues today to demand that either the AI be recognised (via legal fiction) as the new *ex nihilo* creator; or that these works remain unprotected on account of lack of human (emotional) attributes characteristic of romanticised production. The former rationalisation anthropomorphises, the latter overlooks the practical process of creation of emergent works. We argue that both approaches undermine the tedious human effort happening behind the scenes - one that is dispensing Lockean labour, expressing Hegelian personality and deserves utilitarian reward.

The implications of legal literature assuming that "creative robots" are generating works entirely independent of human beings who created the system[75] or that there might be no one holding the proverbial pen,[76] is akin to qualifying "intrinsic qualities and abilities which the software controlling the (output) cannot possibly achieve."[77] Take for instance, the renowned human-computer art collaboration created by artist Harold Cohen using a programed plotter that he named AARON.[78] Dr. Bridy asks, "Is Cohen also properly regarded as the author of AARON's paintings? He doesn't lift a finger to create them, after all."[79] However, as per Harold's son, Paul Cohen, "He had little faith in machine learning… he wanted to retain control of AARON's development."[80] He did lift his fingers to program AARON through McCarthy's first AI programming language, Lisp. He remained in control of the code, altering it periodically to program AARON for different tasks. Cohen's artworks, with and without the use of AARON, comprised a data corpus authored by him, not the plotter.

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74 M.E. Kaminski, "Authorship, Disrupted: AI Authors in Copyright and First Amendment Law", 51 *U.C. Davis Law Review* 589, 598 (2017).

75 S.Y. Ravid and L.A.V. Hernandez, "Copyrightability of Artworks Produced by Creative Robots and Originality: The Formality-Objective Model", 19 *Minnesota Journal of Law, Science & Technology* 14 (2018).

76 *Supra* note 73 at 21.

77 W.J. King, "Anthropomorphic Agents: Friend, Foe, or Folly", HITL Technology Memo (1995), *available at*: https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.57.3474&rep=rep1&type=pdf. (last visited on March 16, 2022).

78 H. Cohen, "Aaron", *available at*: http://www.aaronshome.com/aaron/index.html (last visited on March 6, 2022).

79 A. Bridy, "The Evolution of Authorship: Work Made by Code", 39 *Columbia Journal of Law and the Arts* 395 (2016)

80 P. Cohen, "Harold Cohen and AARON", 37 *AI Magazine* 63 (2017).

The 'Portrait of Edmond Belamy' is a GAN-based artwork developed by Obvious, a Parisian art collective of three students, Hugo Caselles-Dupré, Pierre Fautrel and Gauthier Vernier. The algorithm was fed with 15,000 portraits dating 14th to 20th century. *Belamy* being the french colloquial to GAN's creator Goodfellow. Christie's noticed Obvious' work on SuperRare, a blockchain market and touted it as a "portrait… not the product of a human mind. It was created by an artificial intelligence." "The giveaway clue as to the origins of the work is the artist's signature at the bottom right - in cursive Gallic script it reads: (min G max D x [log (D(x))] + z [log (1 – D (G(z)))])."[81] Caselles-Dupré proclaimed, "If the artist is the one that creates the image, then that would be the machine."[82]

All is not that obvious. The promotion for auction of *Belamy* was, "some really clumsy communication of what we did, and we just thought it was cool, so we did it like this."[83] Germany-based AI artist, Mario Klingemann, who was cited among Obvious' inspirations told The Post that he believed, "Maybe this is just a practical joke among oligarchs... [The Obvious portrait] is something that everybody can do. You can clone this [code] from GitHub, start your computer and start doing it."[84] The *Belamy* code was indeed lifted from GitHub, originally authored by a then-19 year old Robbie Barrat and Klingemann has stated, "You could argue that probably 90 percent of the actual 'work' was done by [Barrat]".[85] In contrast to Obvious, Barrat provides a truer version of the process, "A human chose the data set. A human designed the network. A human trained the network. A human curated the resulting outputs."[86]

Caselles-Dupré clarified in a subsequent interview to ArtNome, "If I was not part of this and saw the articles that are coming out, I would think it was a scam or not

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81 *Supra* note 41.

82 *Ibid.*

83 J. Bailey, "The AI Art at Christie's Is Not What You Think" *Artnome* Oct. 14, 2018, *available at*: https://www.artnome.com/news/2018/10/13/the-ai-art-at-christies-is-not-what-you-think ((last visited on March 16, 2022).

84 M. Flynn, "A 19-year-old developed the code for the AI portrait that sold for $432,000 at Christie's", *The Washington Post* Oct. 26, 2018, *available at*: https://www.washingtonpost.com/nation/2018/10/26/year-old-developed-code-ai-portrait-that-sold-christies ((last visited on March 16, 2022).

85 J. Vincent, "How three French students used borrowed code to put the first AI portrait in Christie's" *The Verge* Oct. 23, 2018, *available at*: https://www.theverge.com/2018/10/23/18013190/ai-art-portrait-auction-christies-belamy-obvious-robbie-barrat-gans (last visited on March 16, 2022).

86 *Supra* note 83.

right..."[87] Lovelace's critique reasserts its relevance. Post the auction, the issue of "AI Knowledge gap" has assumed interest among AI practitioners, many of whom are now highlighting the divide between actual and perceived scientific progress in the field.

A combined empirical study[88] conducted by scientists from MIT, Harvard and Max Plank Institute found that creating a narrative that repeatedly emphasises on AI as an anthropomorphic technology "may lead to situations wherein individual responsibility and accountability is obfuscated due to a lack of clear understanding of who the relevant actors are and how they interact."[89] They conclude, *inter alia*, that Obvious' code is a 'tool' and not an autonomous 'agent'. This misclassification is prejudicial "to allocating credit and responsibility to human stakeholders"[90] since "increased anthropomorphicity of an AI system may diminish the perceived responsibility of all human actors involved."[91]

In another recent paper, leading AI practitioners clarify, "To date, no system exists that exhibits the intentional autonomy that philosophers such as Boden argue is fundamental for human creative practices, and mechanisms to achieve it remain illusive".[92] Boden views "self-organisation" as synonymous with a specific kind of autonomy where, "the system's independence is especially strong: it is not merely self-controlled, but also self-generating", [93] with the "self" in self-organisation referring to the impersonal components of the system, not the intentional, mental self.[94]

AI experts from Monash University's SensiLab explain succinctly, "…their ability to act autonomously is limited within a very tight statistical framework that is derived from their training data. While a claim such as, 'an AI created this artwork' might be literally true, there is little more autonomy or agency that can be attributed to such an

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87 *Ibid*.
88 Z. Epstein, S. Levine, *et.al*., "Who Gets Credit for AI Generated Art?" 23 *iScience* 1 (2020).
89 *Id*. at 2.
90 *Ibid.*
91 *Ibid*.
92 Z. Epstein, H. Blakeley H. Payne, *et.al*., "Closing the AI Knowledge Gap", ArXiv (2018), *available at*: https://arxiv.org/pdf/1803.07233.pdf; S. Colton, A. Pease, *et.al., On the Machine Condition and its Creative Expression*, Proceedings of the International Conference on Computational Creativity (ICCC) (2020), *available at*: https://acris.aalto.fi/ws/portalfiles/portal/51479962/Colton_et_al_Machine_Condition_ICCC20.pdf. (last visited on March 29, 2022).
93 M. A. Boden, *Creativity and Art: Three Roads to Surprise* 180 (OUP, Oxford, 2010).
94 J. Mc. Cormack, T. Gifford, *et.al*., "Autonomy, authenticity, authorship and intention in computer generated art", 11453 *Lecture Notes in Computer Science* 35 (2017).

act than would be to a situation where 'a word processor created a letter', for example."[95] On whether present stream of AI-assisted works should be categorised as a new kind of cultural production, McCormack *et al*. [96] say, "Probably not in any major way. At least no more than any other kind of computer generated art (which has existed since 50 years)."

Arthur Miller's interviews[97] show that these machines and algorithms may themselves have become the new artist's muse. For her poetry-generating AI, Prof. Allison Parish of NYU-ITP, is of the opinion "I always seize authorship for myself… When I put out a book of poems it's by Allison Parrish, not Allison Parrish and a poetry bot … in the same way that a Jackson Pollock painting is not by Jackson Pollock and a paint can."[98]

When we as researchers speak of "training" an algorithm, or an algorithm that "learns," it is easy to misinterpret this as being the same thing as human learning - but these words mean quite different things in the two contexts.[99] Some AI practitioners are suggesting new terminologies in order for subsequent AI research to break free from drawing parallels between human and machine intelligence.[100]

Mapping the human condition onto software existence likely serves more the purpose of understanding humanity than increasing our understanding of machines.[101] Accurate attribution not only benefits these authors, but helps establish the authenticity of work produced with AI systems.[102] We need to recognise the value being generated from personal unique decisions of how to use the AI and disseminate emergent works as a continuation of the dialogic system that post-structuralist critique identifies as among the core functions of authorship.

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95 *Ibid.*
96 *Ibid.*
97 *Supra* note 36.
98 *Id*. at 244.
99 A. Hertzman, "Can Computers Create Art?" *7*(2) *Arts* 18 (2018).
100 D. Watson, "The Rhetoric and Reality of Anthropomorphism in Artificial Intelligence", 29 *Minds & Machines* 417–440 (2019).
101 *Supra* note 92 [S. Colton].
102 *Supra* note 94 at 10.

4. A New Creative Process

Artbreeder,[103] a collaborative AI platform works on StyleGAN and BigGAN models that allow crowdsourcing of artworks which users can morph and manipulate to create new art through a custom interface. As newer works were constantly added to the website, it became difficult to decide whom, if anyone, could claim sole rights on the images.[104] Alexander Reben, believing that these works were 'created by AI' and thus available for public use, arranged for a gallery show of their prints. After being called out on Twitter by another GAN-artist, Danielle Baskin, he conceded to allegations of substantial similarity. Artbreeder then clarified, "Any shared image can be used, edited or mixed." Now, a unique lineage of each contributing user is stored in the metadata and the website identifies uploads by usernames. The updated Terms of Use[105] require users "…to license any images you create on Artbreeder under the Creative Commons CCo license."

If an author makes incremental additions via a system that continuously builds off of other works, can this work be considered "original"? Is this a process of appropriation resulting in infringement or of inspiration protected and promoted by fair use/fair dealing provisions? This part analyses criticisms against AI in four successive degrees of severity – do these works meet legal requirements for copyrightability? Are they violating existing copyright rights? Will they overtake the market to the detriment of traditional creators? And lastly, will they subvert the entire social space of creative and original effort that copyright law was built to protect?

4.1. Threshold of Originality

The American *Trade mark cases*[106] stylised 'originality' in a romantic perspective of "fancy or imagination… genius, elaborate thought." Since then, legal threshold has been lowered to expenditure of some 'skill and judgment'. Holmes, J. in *Bleistein* v. *Donaldson Lithographing Co.*, moved away from "evaluation of aesthetics."

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103 "Artbreeder", *available at*: https://www.artbreeder.com (last visited on March 23, 2022).

104 Jason Bailey, "Why is AI Art so Complicated?" *Artnome* March 27, 2019 *available at*: https://www.artnome.com/news/2019/3/27/why-is-ai-art-copyright-so-complicated ((last visited on March 23, 2022); A. Hertzmann, "New AI art has artists, collaborators wondering: Who gets the credit?" *The Conversation* March 7, 2019 *available at*: https://theconversation.com/new-ai-art-has-artists-collaborators-wondering-who-gets-the-credit-112661 (last visited on March 23, 2022)

105 Artbreeder, "Terms of Use" Nov. 20, 2019, *available at*: https://www.artbreeder.com/terms.pdf.

106 Trademark Cases, 100 US 82 (1879).

In *Alfred Bell*[107], Frank, J. held, "A copyist's bad eyesight or defective musculature, or a shock caused by a clap of thunder, may yield sufficiently distinguishable variations." Works are eligible for copyright without too deliberate or specific identification of authorial intent.

In *Feist Publications*, Rural's attempt at copyright failed, as a constitutional matter, because originality also requires "creativity," and its work did not exhibit the requisite degree of that quality.[108] Common-law conception then devalued from "sweat of the brow" to "modicum of creativity". The requirement is not as stringent as novelty demanded by patent law; instead, it is to show as *Burrow-Giles'*[109] prescribed "intellectual production, of thought, and conception." The courts may also consider elements of selections and arrangement to ascertain presence of originality.

The long-standing insistence that American copyright is a protection of economic rather than personal interests[110] is opposed to CJEU's *droit d'auteur* emphasis on personality. In *Infopaq*[111] making short summaries through a data extraction process did not violate right of reproduction since they were products of "authors own intellectual creation" as "evidenced clearly from the form, the manner in which the subject is presented and the linguistic expression."[112] Words as such are not protected and "creativity in an original manner" was expressed "through the choice, sequence and combination of those words."[113] In *Football-Dataco*[114] it also included "subjective choices, thereby imprinting the work with his personal touch" in the 'selection or arrangement of the data' contained therein.

The issue of exercise of "too minor (a) degree of creative freedom" was considered in *Painer*. The court held that an intellectual creation is an author's own if it "reflects the author's personality."[115] That is the case if the author was able to express his creative abilities in the production of the work by making "free and creative choices"[116]

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107 *Alfred Bell* v. *Catalda Fine Arts Inc*., 191 F.2d 99, 158 (2d Cir. 1951).
108 Dianne Zimmerman, "It's an Original! (?): In Pursuit of Copyright's Elusive Essence", 28 *Columbia Journal of Law and the Arts* 187, 194 (2005).
109 *Burrow-Giles Lithographic* v. *Sarony*, 111 U.S. 53 (1884).
110 *Supra* note 108.
111 *Infopaq International A/S* v. *Danske Dagblades Forening* [2009] ECLI:EU:C: 2009:46.
112 *Id*. at 44.
113 *Id*. at 45.
114 *Football Dataco* v. *Yahoo!UK*, (2012) ECLI:EU:C:2012:115.
115 *Eva-Maria Painer v. Standard VerlagsGmbH and Others*, (2011) ECLI:EU:C:2011:798.
116 *Id.* at 89.

which can be made "several ways and at various points in its production."[117] For instance, the "stamp of personal touch" in photographs can be expressed through choice in lighting, background, pose, framing, view of angles as well as choice of procedure for post-production development.

Importantly, in *Premier League* and *Cofemel,* "the extent of that protection does not depend on the degree of creative freedom exercised by its author."[118] The CJEU does not, however, seem to require that the author's creativity or personality (''personal stamp'') be objectively discernible in the resulting expression (the output).[119] Comparable to common law requirements, EU copyright *acquis* does not require assessment of aesthetic quality and elements of novelty.

In UK, the test of originality is based on Lockean labour theory. In *Walter* v. *Lane*[120], work made from a note-taking process was awarded copyright for expenditure of "an 'industrious collection' effort." Similarly, in *University of London Press*[121], originality in an "independent creation" was found through proof of "skill and labour". Post-amendment of the copyright statute, addition of 'original' was noted in *Interlego A.G.*[122] to mean that the work should "originate from the author".

The Canadian Supreme Court crafted a midway between the creativity and industriousness standards in *CCH Canadian Ltd.*[123] deciding the status of originality at "exercise of skill and judgement" which need not be novel creativity but should be more than mere labour. The Indian Supreme Court adopted the same in *Eastern Book Co.* v. *D.B. Modak*[124], "Copyrighted material… maybe it is a derivative work which gives a flavour of creativity… should be original in the sense that by virtue of selection, co-ordination or arrangement of pre-existing data contained in the work, a work somewhat different in character is produced by the author."

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117 *Id.* at 90.
118 *Cofemel* v. *G-Star Raw CV*, (2019) ECLI:EU:C:2019:721.
119 P. B. Hugenholtz and J.P. Quintais, "Copyright and Artificial Creation: Does EU Copyright Law Protect AI-Assisted Output?", 52 *The International Review of Intellectual Property and Competition Law* 1190 (2021).
120 (1900) AC 539.
121 *Univ. of London Press, Ltd.* v. *Univ. Tutorial Press, Ltd.*, (1916) 2 Ch. 601.
122 *Interlego A.G.* v. *Tyco Industries, Inc*. (1989) A.C. 217 (P.C.).
123 *CCH Canadian Ltd.* v. *Law Society of Upper Canada*, 2004 (1) SCR 339.
124 AIR 2008 SC 809.

It is well known that, because of the different nature of copyright works and the inevitable unpredictability of case law, the originality requirements are not even consistent or harmonised within one copyright jurisdiction, and probably will never be.[125] However, the absolute minimum threshold of originality can be seen to contain elements of conscious expenditure of some skill to make choices, selections or arrangements that render in the work presence of some general authorial contribution. What is essential is that room for making creative decisions must be present and the same should have been exercised and expressed.

Even a combination of fairly obvious choices in the design, execution and editing of an AI-assisted output could suffice.[126] By extension, projects like the Next Rembrandt show adequate potential for creative choices and original expression at all stages of the work's production executed under human-defined objectives. Pre-curation and creation of algorithmic source code requires extensive authoring, the generative model itself is heavily reliant on personal selections and arrangements for data corpus, post-curation requires meticulous redaction and often also post-processing and editing.

Sartor *et.al.* conclude, "Artistic works become inputs for a data-mill, which amalgamates, adapts and develops micro-elements, patterns, styles into new outcome, different from each one the input works, and possibly having some novel artistic meaning."[127] Although, even when creative decision-making is apparent, the use of intermediate copies in large data tropes for upstream modelling seem to push fair use/fair dealing constraints which in effect raises concerns of infringement in downstream generated works.

4.2. Balance of Rights

Any software operation or new technology that reliably reduces existing workload is likely to be very popular, especially when it targets operations that are widely perceived as tedious.[128] This also applies to current bottlenecks, such as image search or

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125 A. Rahmatian, "Originality in UK Copyright Law: The Old 'Skill and Labour' Doctrine Under Pressure", 44 *The International Review of Intellectual Property and Competition Law* 34 (2013).

126 *Supra* note 119 at 1199

127 M. D. Esposti, F. Lagioia, *et.al.*, "The Use of Copyrighted Works by AI Systems: Art Works in the Data Mill", 11 *European Journal of Risk Regulation* 51–69 (2020).

128 A. Pfiffer, "Creativity and Technology in the Age of AI", *available at* https://www.pfeifferreport.com/essays/creativity-and-technology-in-the-age-of-ai/ (last visited on March 28, 2022).

learning new features, where AI is perceived as potentially useful.[129] This has made some scholars consider AI-output non-copyrightable on grounds of transparently heavy dependence on upstream use of data which they concur should not be made freely accessible.

Existing US case law involving technology companies may help to explain this distinction and could be applied *mutatis mutandis* to AI scenarios.[130] In *Authors Guild* v. *Google, Inc.*[131] Leval, J. opined that since "Google makes an unauthorized digital copy of the entire book, [but] it does not reveal that digital copy to the public",[132] scanning of copyright-protected material was permissible. Similar activities were also permitted in cases like *Hathitrust*[133] and *Perfect 10 Inc.* [134] Notably in *iParadigm*,[135] Traxler, J. held "a highly creative, and thus highly protected, work could nevertheless be used in a way that is unconcerned and uninterested in those creative aspects."

Also in Europe, legal approaches favourable to transformative automated processing of copyrighted works have often been adopted, by using various legal arguments (eg. by assuming non-revocable implied consent when a text is made accessible over the Internet, or by understanding in a broad sense the idea of transiency).[136] Fair dealing imposes conditions on use of copyrighted material without seeking owner's permission. One such exception, fair dealing under defence of 'research and study', seems to be particularly applicable to data mining for ML.

Transitory reproductions essential for technological purposes have been excused in fair dealing jurisdictions, for instance, to permit storage of cached files while web browsing. Cases involving innovative computational technologies regularly feature the wholesale copying of literary and visual works, and courts have consistently held that wholesale copying can be necessary for certain purposes.[137]

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129 *Id.* at 13.
130 E. Bonadio, L. McDonagh, "Artificial Intelligence as Producer and Consumer of Copyright Works: Evaluating the Consequences of Algorithmic Creativity", 2 *International Philosophical Quarterly* 112 (2020).
131 804 F.3d 202 (2d Cir. 2015), cert. denied 136 S. Ct. 1658 (2016).
132 *Id.* at 221.
133 *Authors Guild* v. *Haithitrust*, 755 F.3d 87 (2d Cir. 2014).
134 *Perfect 10, Inc.* v. *Amazon.com, Inc.*, 508 F.3d 1146 (9th Cir. 2007).
135 562 F.3d 630 (4th Cir. 2009).
136 *Supra* note 127 at 66.
137 A. Levendowski, "How Copyright Law Can Fix Artificial Intelligence's Implicit Bias Problem", 93 *Washington Law Review* 579, 627 (2018).

Both fair use and fair dealing provisions seem to absolve ML processes in Generative AI of infringement, at least theoretically. Japanese copyright law, amended by the National Diet in May, 2018 and entering into force on 1st January, 2019, does the same functionally. New provisions called "flexible limitation provisions" facilitate AI development through use of copyrighted materials in algorithms without any express requirement of seeking consent from those authors. Article 30-4 permits use of protected works for data training so long as it is done "without the purpose of enjoying the thoughts or sentiments expressed."[138] Making of transient electronic copies has been allowed under the new Article 47-4, with the Diet acknowledging that such use will not be considered as causing market harm to prior authors. Finally, compilation of copyrighted works into searchable databases can now be conducted under Article 47-5.

4.3. Market Threat

Some fear that AI training from existing works will outmanoeuvre human-made works when both compete in the same market.[139] The Author's Guild's reply to USPTO's call for comments on AI and Copyright summarises the concern, "The unauthorized (unlicensed) ingestion of copyrighted works to generate new competitive creative works will ultimately cause market harm to the value of human-created copyrighted works that the AI machines essentially mimic in style and essence. Those types of uses should not be permitted without authorization."[140]

Forcing such a demand for authorisation could, in some part, lead us towards a market environment of what Lawrence Lessig identified as the extremism of "permissions culture"—a culture in which creators get to create only with the permission of the powerful, or of creators from the past.[141] In this vein, CJEU's opinion in *Football Association* is noteworthy, "…exception must allow and ensure the development and operation of new technologies and safeguard a fair balance between the rights and

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138 WIPO, *Questionnaire on Artificial Intelligence Policies*, *available at*: https://www.wipo.int/export/sites/www/aboutip/en/artificial_intelligence/call_for_comments/submissions_march2020/ms_japan.pdf (last visited on March 28, 2022).

139 J. L. Gillotte, "Copyright Infringement in AI-Generated Artworks", 53 *UC Davis Law Review* 2655 (2020). ("When AI-generated works directly compete with those of human authors, the latter may eventually stop creating as they see the market for their output shrink.")

140 M. Rasenberger, Impact of Artificial Intelligence ("AI") Technologies on Copyright, Docket No. PTO-C-2019-0038 *available at*: https://www.authorsguild.org/wp-content/uploads/2020/01/Authors-GuIld-Responses-to-USPTO-AI-NOI1.pdf.

141 Lawrence Lessig, *Free culture* 6 (Mort Homme Books, Pennsylvania, 2015).

interests of right holders, on the one hand, and of users of protected works who wish to avail themselves of those new technologies, on the other."[142]

The Guild's argument is problematic on two counts. First, it wrongfully considers access-restriction as a function of copyright. It cannot be pragmatic to seek individual authorisations from the several hundred works that a deep learning algorithm may need to reference in order to function meaningfully. Retracing the post-structural analysis of creative process, it should also not be legally required. In any case, the scraper does not extract expressive elements from the ML training data set. The intermediary copies are transient and the aim is not to replicate them. The information that would be extracted from semantics and probabilistic patterns like words for NLP and visual proportions in artworks is already in the public domain. Dr. Ahmed Elgammal's AICAN has been "trained on 100,000 of the greatest works in art history, from Rembrandt and Bruegel, to Warhol and Rauschenberg."[143]

Second, the Guild fails to take into account the idea-expression dichotomy. The law can protect the poems Robert Frost wrote, but, it does not function to stop everyone else from studying Frost and attempting to author similar works.[144] The premise of copyright law is to protect against copying of content in works, not to promote monopolies over styles and articulation. Consider a model of GPT-3, 'Verse by Verse'[145] an experimental poetry-writing tool that works on a training corpus of 20 American poets.

Furthermore, copyright's minimal requirement for originality does not subscribe to a protection from an anticipated market failure; unless the works are found to be infringing in a court of law.[146] As held in *Hathitrust*, "transformative work... serves a new and different function from the original work and is not a substitute for it."[147] Such arguments do not substantiate why emergent works should face a higher originality barrier given that likelihood and manner of infringements are similar in both. Such

142 *Football Association Premier League* v. *QC Leisure*, [2012] EWCA Civ. 1708.
143 "AICAN", *available* at: https://aican.io/ (last visited on Feb. 18, 2022).
144 A. Aggarwal, *Are Machines the New Authors? Situating Copyright in Works of Artificial Intelligence* (2021) (Unpublished LLM Dissertation, NALSAR University of Law).
145 "Verse by Verse", *available at*: https://sites.research.google/versebyverse/ (last visited on Feb. 18, 2022).
146 *Supra* note 144.
147 *Supra* note 133 at 96.

apprehensions are not sufficiently merited to deny copyrightability of AI-based works altogether.

Restricting access to data may also have negative ethical implications. Prof. Levendowski argues, “Most public domain works were published prior to 1923, back when the "literary canon" was wealthier, whiter, and more Western than it is today. A dataset composed exclusively of these works would exclude voices that were never recorded or rarely published.”[148] Thus, permitting access to data for transformative uses and development of AI technology could have a positive impact on fairer representation in literary, scientific and artistic domains in the long run.

4.4. New Art Movement

A step beyond purporting market failure, the most extreme of assumptions prophesises mass job displacements and an entire dehumanisation of literature and art through replacement of the present stream of authors by AI technology. This is not a new challenge. Photography, cinematography and software were subjected to romantic critiques and dismissed for being irreconcilable with the domain of copyright; whilst outside legal circles, new methods of artistic experimentation gradually became ubiquitous. Social acceptance forced a legal change. Even though philosophical critiques and legislative drafting issues still persist, they attained official “list-status” in the Berne Convention and other treaties and directives, on the common understanding that new media could satisfy minimum Berne standards.

Despite some obvious differences in the methods of production, it serves well to analogise these technologies with AI. It shows us that the nature of theoretical commentary that AI practitioners might be faced with today runs parallel to what photographers and film-makers have already witnessed. In all such commentary, the founding criticism stems from weakening of the author-work bond, allegedly diminishing the value of control and transposition of personality from authors to their work. The purported reason is mechanical intervention – cameras, computers, several hidden layers in deep learning networks, and perhaps now even a combination of all of the above.

[148] *Supra* note 137 at 615.

Hertzman[149] and Arcas[150] among others have specifically noted the frequent dismay which followed when photography began to replace portraiture. Contrary to the disquietude for an end of painting, however, this catalysed the emergence of new genres. This further led to the Modern Art movement and photography developed simultaneously as a *bona fide* art form in itself. Similar misconceptions were opaque for digital film editing, software coding, animation and recently, procedural content generation (PCG). In the present day, a mix of experience with all of these has led to success of motion capture technology, VFX and CGI (some of which has already become AI reliant) and its pervasive prominence in film-making.

Another argument is that a full claim of authorship and consequent originality is impossible because a part of the process that happens in the hidden layers remains unknown. Here too, our previous analogy with photography is useful. The images we see can only be "beautiful" or "real-looking" because they have been heavily processed, either by neural machinery or by code (in which case, both), operating below our threshold of consciousness.[151] Likewise, a programmer need not understand why a neural network 'learned' a certain set of weights, or the mathematics behind a cost function.[152] Even with the variation in determining originality, it is possible for a programmer to demonstrate they used a machine as a tool in attaining a copyrightable result.

Antithetical to the initial scepticism, these tools did not annihilate older art forms, but, only supplanted cumbersome processes for ease-of-use alternatives. Increasing access to these tools simultaneously increased participation of more people in acts of authorship, creative expression, storytelling and social communication. The same is already steadily underway for AI-based works through platforms like Github and Twitter for those interested in AI coding, and alternatives like Artbreeder and Prof. Elgammal's Playform[153] for those who would rather not code. Before rejecting copyrightability entirely, legal scholarship must stop and consider the real possibility that

149 S*upra* note 99.

150 B.A. Arcas, "Art in the Age of Machine Intelligence", *Medium* Feb. 24, 2016, *available at*: https://medium.com/artists-and-machine-intelligence/what-is-ami-ccd936394a83 (last visited on March 21, 2022)

151 *Ibid*.

152 J.K. Eshraghian, "Human Ownership of Artificial Creativity", 2 *Nature: Machine Intelligence* 157-160 (2020).

153 "Playform", *available at*: https://www.playform.io/ (last visited on March 4, 2022).

use of AI has begun; if not to usher in a new art movement, then at least certainly augment and revitalise the creative process.

But, what happens when AI is used to generate similar works by design? Which human stakeholder would be the owner of infringing piece? Who is responsible and to what extent? One such case has already reached the courts in Canada. Production of AI-assisted works has increased, not decreased, the involvement of people in the creative process. The next part shows that the real problem is not about pitting machine automation against human authors, but of appropriate identification of human contribution.

5. Ownership Stakeholders

Adam Basanta's two scanners tipped in front of each other produce abstract pictures influenced by the room's changing lighting conditions, randomised settings and an automatically moving mouse. An AI system compares the images to existing works of art. The first part of the process is 'creation' and the second he calls 'validation'. Basanta's objective is to validate machine-generated art's potential for human consumption by establishing likeness with existing human-made works. A claim has been filed by artist Amel Chamandy, against Basanta's exhibition of "85.81%_match: Amel Chamandy: Your World without Paper (2009)". It's on the Quebec Superior Court to decide if her copyright was infringed.[154]

Judge Learned Hand's Grecian Urn analogy comes to mind.[155] On the face of it, 85% seems like substantial similarity in copyright terms. The similarity match percentage was generated by the AI system, not Basanta's artistically trained eye. The two images are actually absolutely distinct. If existing Canadian standards of originality are applied, the case has no merit. Indeed, the entire setup here is defined by the fact that this is a totally independent creation — and the "validation" process only serves to highlight that there is no copying.[156] Nevertheless, assuming for argument's sake that there was infringement, how would the court decide issues of ownership, allocation and

154 *Galerie NuEdge Fine Arts* v. *Adam Basanta* (decision pending).
155 *Sheldon* v. *Metro Goldwyn Pictures Corporation*, 81 F.2d 49 (2d Cir. 1936).
156 T. Geigner, "Art, AI and Infringement: A Copyright Conundrum" *Techdirt* Oct. 16, 2018, *available at*: https://www.techdirt.com/2018/10/16/art-ai-infringement-copyright-conundrum/ (last visited on April 1, 2022).

responsibility? This part first dispenses with arguments against ownership in AI-based works. We then identify possible stakeholders and analyse recent AI-related judgements.

5.1. Some ghosts, the Titanic and a monkey

While authorship and originality are centred on origination and identity, ownership is more deliberately proprietary and concerned with economic exploitation. Consequently, ownership deems on the entity an aggressive locus of control. Exercising ownership in absence of a visible connection to the work raises an ethical and legal dilemma. Thus, proponents of the view that AI-based works belong only to the public domain have argued that sophistication in deep learning hidden layers precludes any human's claim over the generated output.

This view runs contrary to a fringe inside copyright law. The English court in *Cummins* v. *Bond*,[157] held that since the plaintiff, though under a trance, "actively cooperated in translating the spirit's words into a comprehensible language", she had satisfied criteria for authorship. In *Urantia Foundation*,[158] the American court decided that it was irrelevant whether creator of a work was claimed to be a celestial being and copyright law had no specific requirement to prove human effort for authorship.[159] Thankfully, no court commented on extent of presence of spirits/voices as effectively diluting claims for authorship and ownership.

In *RMS Titanic*[160], authorial control was vested by the court in the director for planning and controlling the film's progress. The fact that he had not used the camera himself or dived to see the shipwreck which was the subject of the film were not important considerations. The now infamous *Monkey Selfie* case[161] centred on the question of who pressed the shutter-release button. The fact that David Slater deliberately organised the camera set-up after spending months on establishing trust with and understanding the behaviour of macaques was belittled by those who wished to use the work for free; but

157 1 Ch. 167 (1927).
158 *Urantia Foundation* v. *Maherra*, 114 F.3d 955, 957 (9th Cir. 1997).
159 A. Kasap, "Copyright and Creative Artificial Intelligence (AI) Systems: A Twenty-First Century Approach to Authorship of AI-Generated Works in the United States", 19 *Wake Forest Journal of Business & Intellectual Property Law* 335 (2019).
160 *Lindsay* v. *The Wrecked & Abandoned Vessel R.M.S. Titanic*, No. 97 Civ. 9248 (HB) (S.D.N.Y. Oct. 13, 1999).
161 *Naruto* v. *Slater*, 888 F. 3d 418, 426 (9th Cir. 2018).

eventually accepted in a large part of legal and expert opinions. Slater's experience stands in stark contrast to that of Sergei Gorshkov.

"The Embrace", Gorshkov's grand-title winning entry for the World Photography Awards 2020[162] was a photograph created using camera traps. Trail cameras or camera traps are cameras rigged with motion sensors that are designed to self-activate and take photos. They are widely used to track animal movements in deep wilderness without human intervention. It was after ten months of failed attempts that Gorshkov found this photograph. Similar to the team that created the Next Rembrandt, Gorshkov had immense control over selection, arrangements and planning, while having very little certainty of what the final output might look like.

Hello Games has created a GAN-based interactive video game called No Man's Sky. A team of programmers has built a self-generating cosmos, and even they don't know what's hiding in its vast reaches.[163] The game presents a traversable cosmos of unimaginable scale: 18 quintillion life-size planets by the studio's latest count.[164] Every single game play is expected to be a unique experience. Again, that is not to say that AI is producing *ex nihilo* – the team has designed highly labour-intensive character drawings, underlying artistic assets and software codes; training and controlling the AI to mix and match to produce coherent forms.

Arguably, Slater, the Next Rembrandt team, Hello Games and Gorshkov expended similar time, effort, creative choices, intervention and judgements to create similar forms of work. Our legal sensibilities should extend to all of them alike. For instance, No Man's Sky's underlying IP assets remain under the uncontested ownership of Hello Games, which the company licenses through an end-user license agreement. Though, in similar situations when multiple interest holders get involved in courts of law, legal opinions get polarised across jurisdictions.

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[162] The Embrace, Wildlife Photographer of the Year, Natural History Museum, *available at*: https://www.nhm.ac.uk/wpy/gallery/2020-the-embrace?tags=ed.current (last visited on May 12, 2022).

[163] R. Morin, "Inside the Artificial Universe That Creates Itself", *The Atlantic* Feb. 18, 2016, *available at:* https://www.theatlantic.com/technology/archive/2016/02/artificial-universe-no-mans-sky/463308 (last visited on Feb. 24, 2022).

[164] S. Parkin, "No Man's Sky: the game where you can explore 18 quintillion planets", *The Guardian* July 12, 2015, *available at:* https://www.theguardian.com/technology/2015/jul/12/no-mans-sky-18-quintillion-planets-hello-games (last visited on May 12, 2022).

5.2. China

In, *Beijing Film Law Firm* v. *Beijing Baidu Netcom Technology Co., Ltd.*[165] ("Baidu"), the first case directly dealing with AI software, the Beijing Internet Court categorically dismissed claims of machine autonomy and attributed authorship to the (human) plaintiff for exercising "supervision and responsibility" over work's production.

Subsequently, in *Tencent*[166], the Shenzhen Court the company Tencent was given authorship over works produced using its AI 'Dreamwriter'. The court elaborated on the requirement of "plaintiff's unique expression of will" that could be noted in arrangements, template-designs and formatting to vest copyright in AI-assisted works. It was also clarified that a software's automated functions did not make it "self-aware" and to consider it to be so would be "unfair".

In *Gao Yang et al.* v. *Golden Vision (Beijing) Film and Television Culture Co. Ltd. et.al.*[167] the court decided for the first time on ownership and infringements of automatically taken photographs. Plaintiffs attached a camera to a hot air balloon and extracted images from the video recording. The court held that choice of balloon, camera, shooting angle, in-camera settings and post-curation from the recordings were all sufficient for claim of ownership.

5.3. Australia

Judicial opinion is in direct contrast in Australia. The High Court emphasised idea-expression dichotomy to allow unrestricted use of databases in *IceTV*[168], affirming that copyright does not protect facts. Later in *Telstra*[169] on the issue of infringement in computer automated telephone directories, it was held that presence of human input should be evident throughout the creation of the work, not just at initial preparations of data. Court remained unwilling to accept Telstra's copyright claims due to a multiplicity of authorial contributions and Telstra not explicitly recognising each author precisely, coupled with the use of Genesis software that initiated a "computerised process of storing, selecting, ordering and arranging the data to produce the directories in the form in which

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165 (2018) Jing 0491 Min Chu No. 239.

166 *Shenzen Tencent* v. *Shanghair Yinxun*, Decision of the People's Court of Nashan District, 24 December 2019 – Case No. (2019) Yue 0305 Min Chu No. 14010.

167 Beijing Intellectual Property Court (2017) Jing 73 Min Zhong No. 797 Civil Judgment. April 2, 2020.

168 *IceTV Pty Limited* v. *Nine Network Australia Pty Limited* [2009] HCA 14.

169 *Telstra Corporation Limited* v. *Phone Directories Company Pty Ltd.,* (2010) FCAFC 149.

they were published." Again, in *Achos Pty Ltd.* v. *UCorp Pty. Ltd.*[170] copyright protection was refused for material safety data sheets produced using computer automated process.

5.4. USA

In *Rearden LLC* v. *Walt Disney*[171] conflict arose over a motion capture software, MOVA which has been used frequently in high-budget Hollywood motion pictures. In a previous lawsuit Rearden had attained favourable ruling against Digital Domain 3, which froze special effects works in big-banner films. [172] This second lawsuit nearly threatened to disrupt Disney's profits. Rearden argued that since it owned MOVA, it should consequently exercise rights over all characters generated from its use; since it was the software that was doing "lion's share" of the work by tracking faces in high-precision and rendering in 3D. Tigar, J. held to contrary, assessing "lion's share of creativity" being exercised by actors and directors of the movies with the software itself being of "marginal" assistance. This test can at best be employed only in a case-to-case inquiry.

Another strain of thought contemplates assigning legal personhood to AI. This could be a quick solution. A self-aware "strong AI" could perhaps be considered an author, with ownership vesting in a human through the work-for-hire doctrine. Yanisky-Ravid deliberates, "AI systems should be seen as the creative employee or self-contractor creators working for or with the user—the firm, human, or other legal entity operating the AI system."[173]

However, the development of such technology is far out of reach. Denicola reasons that, "if computers lack "personhood" for purposes of copyright ownership, it seems wrong to then characterize them as "employees" for purposes of the work made for hire doctrine."[174] With anthropocentrism's potential to absolve participating humans of responsibility, premature creation of legal fiction within copyright and its subsequent transposition to other AI domains can create a detrimental precedent; especially in high-risk areas like automated weapons systems and self-driving automotive industry.

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[170] [2012] FCAFC 16.
[171] 239 F. Supp. 3d 963 (N.D. Cal. 2018).
[172] S. Jhonson, "Digital Domain's New Legal Setback Freezes VFX Tech Used by Major Studio" *The Hollywood Reporter* June 28, 2016 *available at*: https://www.hollywoodreporter.com/news/general-news/digital-domain-mova-tech-banned-906902/ (last visited on March 15, 2022).
[173] *Supra* note 75 at 671.
[174] R.C. Denicola, "Ex Machina: Copyright Protection for Computer-generated Works", 69 *Rutgers University Law Rev*iew 251 (2016) (emphasis in original).

5.5. Common Law Jurisdictions

Section 9 (3) of the UK Copyright Designs and Patents Act, 1988 is analogous to provisions in South Africa, Ireland, India, Hong Kong and New Zealand.[175] It reads, "In the case of a literary, dramatic, musical or artistic work which is computer-generated, the author shall be taken to be the person by whom the arrangements necessary for the creation of the work are undertaken." The intention was to assimilate into copyright's list of works, those with no apparent human author.

The quantum of "arrangements" required as well as the criteria to deem them "necessary" have not yet been expounded upon. In *Century Communications* v. *Mayfair Entertainment*[176], the court identified that the person who has "initiated the making of the film, organized the activity necessary for making it, and paid for it" was the one responsible for copyright rights. *Nova Production*[177] has been the only case in UK to apply Section 9 (3). Kitchin, J. was of the opinion that merely playing a game did not satisfy the "arrangements necessary" to claim authorship. The author of each frame in arcade games was, thus, the programmer.

One potential consideration of test of "arrangements necessary" could follow the requirements of "supervision and responsibility" elaborated in *Tencent* and *Baidu*. The core rationale behind both appears to be identification of the person most proximate to the work. It also remains to be seen if this proximity shall be in terms of control over dissemination of work or creative decision-making or both. In the event of the former, precedent that "rules or constraints leave no room for creative freedom" found in existing rulings like *Achos* and *Football Dataco* might operate as restrictive criteria.

In India, the provision does not seem to be applicable to cinematography and sound recordings. Incidentally, AI use has already become prevalent in both these arenas. Especially after *Ramesh Sippy* v. *Shaan Ranjeet Uttamsingh*[178] where the Bombay High Court has expanded the meaning of author and first owner, holding that "there is no such prohibition in section 13 (2) (ii) which precludes a Partnership firm or a Company to be an author /first owner of copyright (in films)", this could bear interesting results.

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175 The Indian Copyright Act, 1957 (Act 14 of 1957), s. 2 (d) (vi); Ireland's Copyright and Related Rights Act, 2000, s.2; South African Copyright Act, 1978, s. 1(h) and New Zealand Copyright Act, 1994, s. 5 (2)(a).

176 [1993] EMLR 335.

177 [2007] EWCA Civ. 219.

178 (2013) (55) PTC 95 Bom.

6. Conclusion

AI artists that are participating in the relational social practice of authorship, and communicating to us as an audience through a new technological process that subverts notions of the lone creator, merit recognition. Referring again to the Next Rembrandt project, it becomes evident that even one of the most advanced and complicated AI outputs thus far has been crucially dependent on human creativity, decision-making, selection, skill and cultural dominion.

Legal scholarship with its conflicted perception of romantic authorial experience, has either accepted or rejected machine authorship for presence or absence of a solitary genius behind the work. However, as soon as an exhaustive undertaking to delineate the new creative process is initiated, it becomes clear that wanting or imagining anthropocentric insights in AI systems is not required.

AI is not the first technology to strain the human-work bond. Recourse to copyright's treatment of previous technologies holds valuable insights to interpret current reactions for and against AI as well as to demarcate probable policy solutions. Chinese courts and Japanese public policy are taking the smart approach of permitting some uses that are essential to the proliferation of AI technology, with a larger aim of assisting further AI development and simultaneously gaining first-mover advantage in an emerging and well-funded market.

In case Professor Grimmelman[179] is wrong and the day of complete machine autonomy dawns on us with copyright still being a concern, then perhaps, tools of legal fiction shall become ever more useful. AI is helping professionals amplify their creative expression and steadily becoming more accessible for common use. Enforcing unseemly restrictions heightens the AI knowledge gap and has no theoretical or legal grounding.

[179] J. Grimmelmann, "There's No Such Thing as a Computer-Authored Work", 39 *Columbia Journal of Law and the Arts* 403 (2016).