CREATIVE ARTIFICIAL INTELLIGENCE:

CHANGING DYNAMICS OF AUTHORSHIP, DEMOCRATISATION AND CREATIVITY IN THE DIGITAL AGE

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Synopsis

This dissertation is a thorough exploration of the dynamic relationship between artistic expression and technology, with a specific focus on the field of generative artificial intelligence. Through a comprehensive approach that combines theoretical angles by Foucault and Barthes with the practical analysis of artwork and case studies, this research interrogates classic and contemporary views on authorship, creativity, and democratisation. By examining the complexities surrounding human-machine collaboration in the arts, it tackles ethical issues and underscores the importance of transparency and accountability in the creative and technological industries. The investigation of gender-biased algorithms highlights larger issues of social inequality and the need for more inclusive approaches to the creation of generative art. This dissertation is a call for a redefinition of preconceived notions of authorship that embraces the collaboration between human and machine, advocating for an egalitarian and decentralised creative environment. The symbiotic future of human creativity and artificial intelligence will open doors for unprecedented artistic potential, commencing a more democratic and innovative era of artistic expression.

Key words: artificial intelligence, creativity, authorship, democratisation, algorithmic bias, collaboration.

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Introduction

Throughout history, the link between the human condition and technological development has been at the heart of artistic expression. Artists have always wrestled with the ideas of authorship, and interpretation, seeking to define the concept of creativity, but they have also sought to expand their creative capabilities through evolving tools. In the 20th century, French literary critics and philosophers Roland Barthes and Michel Foucault presented seminal theories on the nature of authorship, redefining the modern interpretations of literature and art. Yet, in the contemporary artistic landscape, with the rise of digital technologies augmenting the creative process, a paradigm shift is facing the creative industry. Generative artificial intelligence[1] has emerged as a disruptive force in this field, challenging the traditional notions of authorship and creativity and presenting serious ethical challenges in the creation of art. This continues to be evidenced by how society navigates[2] this art form, triggering a range of reactions including scepticism, intrigue and confusion. The prospect of an autonomous generative artificial intelligence poses both opportunity and ethical implications and calls for a revaluation of our definition of authorship.

Therefore, this dissertation aims to interrogate the relationship between artificial intelligence and contemporary art, with a specific focus on authorship, democratisation, and algorithmic bias. By examining Foucault and Barthes' theoretical perspectives on authorship and interpretation, and interrogating the complexities of commodification, algorithmic bias, and non-hierarchal approaches to artistic expression, the research targets to unravel the specific challenges facing this industry and to envision how the future may look for generative artificial intelligence. This involves a comprehensive literature review of classical and contemporary works on authorship and democratisation, including authorship in the context of artificial intelligence. An analysis of artworks and case studies was used to gain further insight into the ownership of art, and the ethical implications and biases carried out in artificially generated art. The interdisciplinary approach to

[1] For the context of this dissertation, generative AI can be described as a machine learning algorithm designed to form new data based on an existing dataset. It is a type of program that generates data visually similar to the data it learns from.

[2] Martin Ragot, Nicolas Martin, and Salomé Cojean, 'AI-Generated vs. Human Artworks. A Perception Bias Towards Artificial Intelligence?', in *CHI '20: CHI Conference on Human Factors in Computing Systems* (Honolulu, United States, 2020) <https://doi.org/10.1145/3334480.3382892>.

the research has contributed to a greater understanding of the impact of artificial intelligence on the contemporary artistic landscape.

The decision to centre on gender-based algorithmic bias comes from the acknowledgement that it reflects a larger issue of gender inequality and a need to investigate how deeply these issues run in artificial intelligence models. Narrowing the research down allowed for a more comprehensive analysis of specific ethical concerns in this field, while still recognising the broader ethical issues[3] befalling generative algorithms.

Furthermore, the research includes a qualitative data analysis of biased patterns in publicly available artificial intelligence models, along with a study into how data bias is used by independent artists like Sougwen Chung to create algorithms personalised to their creative practice. Presenting different consequences of algorithmic bias offers a more profound inquiry into the complex relationship between the human and the machine and aims to make evident that the discourse surrounding artificial intelligence in the arts should not be defined by exclusivity and traditionalist perspectives.

In summary, this dissertation presents a comprehensive exploration of the complex field of artificially generated art, where the relationship between the human and the machine proves to be a defining factor in the future of this art form. By interrogating the connections between authorship, democratisation, and data bias, this work aims to unearth the underlying prejudices held against and by generative art, but to also visualise a path towards a more inclusive and transparent creative environment for all.

[3] 'Common Ethical Challenges in AI - Human Rights and Biomedicine - Www.Coe.Int', *Human Rights and Biomedicine* <https://www.coe.int/en/web/bioethics/common-ethical-challenges-in-ai>.

Chapter 1

A Timeline of Generative Artificial Intelligence

While the field of artificially generated art has steadily gained more momentum in the past ten years[4] its origins can be traced back to the mid-20th century. Pioneers like Alan Turing[5] and John McCarthy[6] envisioned machines capable of exhibiting intelligent behaviour, but it was only after the emergence of computers with significant working memory[7] that the concept of machine autonomy could start to take form. The collaboration between artists and machines flourished in the 1960s and 1970s, most notably through the work of Harold Cohen and other artists utilising computers as tools for artistic expression. Cohen was the creator of AARON, a computer program which used code to generate initially primitive, monochrome paintings, but would later develop to be able to successfully draw human figures in colour.[8]

AARON works based on a set of rules[9] governed by Cohen, who instilled his knowledge of art into the algorithm. The rules regulate various traits of the creative process including colour and composition. As the program evolved further, Cohen would introduce new features, allowing AARON to draw based on different subject matters, drawing styles and to diversify its artistic capabilities.[10] Collaborating with a machine on such a deep level was previously unseen in the art world, challenging preconceived notions of authorship and originality. AARON and Harold Cohen left a lasting impact on the creative industry, opening doors for contemporary artists to explore the creative capabilities of computer algorithms.

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

[5] Alan Turing was an English mathematician, computer scientist and the father of theoretical computer science. He is most famous for decoding German Enigma machines during World War II and for inventing the Turing Test to determine whether a machine can demonstrate human intelligence.

[6] John McCarthy is an American computer scientist, often considered the founder of artificial intelligence. He coined the term 'AI' in 1955.

[7] Random Access Memory (RAM) is the computer's short-term memory used to store data, run applications and open files.

[8] Pamela McCorduck, *Aaron's Code: Meta-Art, Artificial Intelligence, and the Work of Harold Cohen* (W.H. Freeman, 1991).

[9] Harold Cohen, 'The Further Exploits of Aaron, Painter', 1995 <https://www.semanticscholar.org/paper/The-further-exploits-of-Aaron%2C-painter-Cohen/171f19892e6c50293390791d377f0750e41df21>.

[10] Paul Cohen, 'Harold Cohen and AARON', *Ai Magazine*, 37 (2016), 63–66 <https://doi.org/10.1609/aimag.v37i4.2695>.

Further advancements in computer science allowed artificial intelligence to enter a new era of evolution. With the emergence of generative algorithms,[11] that make use of existing data patterns and predetermined data structures to produce new data., artists were able to utilise artificial intelligence to create according to an array of parameters determined by them. With this came the branch of machine learning (ML), which centred on algorithms replicating how humans think. The expansion of machine learning[12] unlocked vast amounts of potential for the world of generative art, which was propelled by the invention of Google's DeepDream.

The software, introduced in 2015, was initially used for image recognition by employing neural networks,[13] created for mimicking human behavior. DeepDream produced dream-like images based on the programmer's instructions by augmenting patterns from existing images.[14] Its algorithm was trained on an image-based dataset, allowing the network to recognise common visual patterns and structures.[15] DeepDream was made open source by its creators, sparking a larger public interest in generative artificial intelligence. The transparency of the DeepDream code is not something that has transpired into later inventions in the field, as will be discussed further on.

Perhaps the most significant breakthrough for this art form was the emergence of style transfer[16] and Generative Adversarial Networks (GANs).[17] Style transfer is an optimization technique in which two images are taken, one as a reference and the other as a product, and the style of the reference image is transferred onto the content of the product image. GANs are a part of machine learning also known as generative models, in which an algorithm generates an image based on a

[11] Ian Goodfellow and others, 'Generative Adversarial Nets', in *Advances in Neural Information Processing Systems* (Curran Associates, Inc., 2014), XXVII <https://papers.nips.cc/paper_files/paper/2014/hash/5ca3e9b122f61f8f06494c97b1afccf3-Abstract.html>.
[12] 'Introduction | Machine Learning', *Google for Developers* <https://developers.google.com/machine-learning/gan> [accessed 31 March 2024].
[13] 'What Is a Neural Network? | IBM' <https://www.ibm.com/topics/neural-networks>.
[14]'DeepDream - a Code Example for Visualizing Neural Networks', 2015 <https://blog.research.google/2015/07/deepdream-code-example-for-visualizing.html>.
[15] Abhishek Mishra, 'Using AI to Generate Art: An Introduction to Google's DeepDream Algorithm', *Medium*, 2023 <https://medium.com/@abhishekmishra13k/using-ai-to-generate-art-an-introduction-to-googles-deepdream-algorithm-b71972b87b95>.
[16] 'Neural Style Transfer | TensorFlow Core', *TensorFlow* <https://www.tensorflow.org/tutorials/generative/style_transfer>.
[17] Goodfellow and others, XXVII.

training dataset of similar reference images.[18] The program does this by pairing together a generator, which produces the target image, and a discriminator, which distinguishes output data from the training data. The two go back and forth until the discriminator cannot distinguish between the output and a training image. Common examples of GANs are Midjourney,[19] DALL-E[20] and Stable Diffusion.[21]

Today, firms like OpenAI are creating increasingly sophisticated generative models such as Sora,[22] a text-to-video model capable of creating minute long outputs with remarkable visual quality. It is able to generate complex scenes with accurate depictions of people, motion, and backgrounds because it has a deep knowing of natural language and understands how the physical world operates, not just what the user prompts.

Looking forward, generative artificial intelligence is set to develop even further, with NVIDIA CEO Jensen Huang suggesting that coding will become redundant in the face of generative artificial intelligence since the algorithms will understand natural language.[23] The rising autonomy of artificial intelligence raises questions on the nature of authorship of the outputs made by the generative models. As this technology develops further, it is crucial to examine its potential impact on society's preconceptions of authorship and creativity and to encourage a reconsideration of these notions. The future of art is rooted in a dynamic and egalitarian relationship between human and machine, therefore embracing it will unleash a transformation of our traditionalist views on the above-mentioned concepts. Nonetheless, to look towards the future we must first reflect on the past developments of our relationship with authorship and creation.

[18] 'Introduction | Machine Learning', *Google for Developers* <https://developers.google.com/machine-learning/gan>.
[19] 'Midjourney', *Midjourney* <https://www.midjourney.com/website>.
[20] 'DALL·E 3' <https://openai.com/dall-e-3>.
[21] 'Stable Diffusion Online' <https://stablediffusionweb.com/>.
[22] 'Sora' <https://openai.com/sora>.
[23] Mohd Kaif, 'NVIDIA CEO, Is Coding Dead? You Need to Know', *Medium*, 2024 <https://medium.com/@mhkaif/nvidia-ceo-is-coding-dead-what-you-need-to-know-4c57ffd47ad2>.

Chapter 2

Foucault and Barthes on Authorship and Meaning

Michel Foucault's Theories on Authorship in *What is an Author?*

Writing on the nature of authorship, Michel Foucault proposed the theory that an Author's being is exceeded by his function, and thus should not eclipse the interpretative potential his work carries. [24] He contests the notion that the Author's identity has Authority over how discourse is to be interrogated, where the very concept of an Author is a transcendent, genial figure, where his name is to be received within a specific context and is equivalent to status. Recognising that the Author's proper name and Authorial function are not mutually exclusive in societal perspectives, Foucault reluctantly states that the nature of the Author persona, both individual and functional, influences how we perceive information about them and how we interpret their work. Therefore, he situates the Author between *description* and *designation*[25], where the descriptive and designating qualities of the Author are correlated but not interchangeable and have played a key role in shifting our understanding of authorship through time. To illustrate this, he uses the examples of Hippocrates and Honoré de Balzac[26]; the significance of authorship has transformed from that of a collective, anonymous Authorial figure (in the case of Hippocrates), in which value stems from the empirical knowledge a work carries, and where the meaning is a product of process and analysis, to the individual Author persona (in the case of Balzac) granting value and meaning to work through emotion, biographical intuition, cultural and societal context and the influence of personal formative experiences. However, both Authorial figures have the ability to establish a unified relationship between a series of works, providing them with authenticity, homogeneity, and a unified intent. Such a function allows one to cluster together a series of texts, give them a classificatory utilization and compare them to other groups of texts. In essence, while the meaning and value of authorship in the case of Hippocrates originates from the process of creating a work and the conclusions it derives, and in the case of Balzac from the context of the work, as well as the audience's relationship to the Author persona, both Hippocrates and Balzac's Author function

[24] Michel Foucault, 'What Is an Author?', in *Aesthetics, Method, and Epistemology*, ed. by James D. Faubion, trans. by Robert Hurley (New York: The New Press, 1998), II, 205–22.
[25] Foucault, p. 209.
[26] Foucault, p. 210.

are projections of our relationship with the text onto an amorphous figure that we call Author, and under which we encompass a collection of works into one entity.

Having established this, Foucault offers the idea that the Author is a product of culture and societal norms, within which his function is to limit, control and suppress the "proliferation of meaning."[27] He introduces authorship as a method for organising discourse in such a way that gives it a unified form, illustrating it as epistemes – large systems of rules that govern the boundaries of what is considered true: the logic of appropriation; subjection to rules; projection; and the multiplicity of ego[28].

The logic of appropriation asserts that the Author function is determined by whether a piece of discourse can be regarded as a commodity and whether it is subject to legal or institutional regulation such as copyright law (works including articles, novels, books, etc.) The value of discourse, in his eyes, is closely related to its commodification, its relationship with the economy and market, where the Author is significant only if their work is treated as an article of trade and has economic value. Foucault further argues that the Author function is shaped by legal regulation such as copyright law or censorship, which can lead to institutions and governments attributing meaning to a work according to the beliefs they want to endorse. Therefore, the Author persona does not hold full ownership of their work since their function is determined through a legal framework. In this sense, *appropriation* is the subjection of the Author's work to the limitation of access by ideology and changing power dynamics. Appropriation can establish and remove the Authority of the Author over the meaning and interpretation of their work. Hence, the Author function is not only a reflection of their creative process but also a mechanism of power and possession over the function itself. A very famous example of the Author being subject to appropriation would be the work of George Orwell[29], more specifically *Animal Farm* and *Nineteen Eighty-Four*. While we look at Orwell's work today as revolutionary and one of the best commentaries on oppressive government to ever have been written, *Animal Farm* struggled to get published and was initially banned due to Great Britain's alliance with the Soviet Union in the Second World War but was later, in 1987, banned in the state of Florida for being 'pro-

[27] Foucault, p. 221.
[28] Foucault, p. 216.
[29] Eric Arthur Blair (1903 – 1950), more commonly known as George Orwell, was an English literary Author whose work was characterised by their critique of social issues, their stance against totalitarianism, and their advocacy for democratic socialism.

communist'[30]. This evidences how the same content can be appropriated differently by certain power structures, subject to their ideology and Authority over the Author function as a result of legal regulation.

Foucault next states that authorship is governed by a set of rules regulated by society, but that those rules are subject to change through time and societal development. Taking the Middle Ages as an example, literary works were less inclined to have an individual Author figure behind them and would often end up in the public domain as folklore, passed on verbally through generations. Only much later would they be published as Authored works, such as *Grimm's Fairy Tales*[31] by Jacob and Wilhelm Grimm (1812), which is arguably the most famous collection of folktales in the world, some of which are said to have originated in the 17th century. Contrary to that, scientific text would require a 'seal of approval' of being Authored by an individual Authorial figure in order to be taken seriously, an example of which is Abu Qasim Khalaf Ibn Abbas Al Zahrawi's *Theoretical and Practical book*[32], where he introduced over 300 surgical procedures and 200 surgical instruments. The shift in expectations from the Author figure only happens in the 17th or 18th centuries, where literature invests itself more in the figure of the individual and genius of the Author persona,[33] as evidenced by the influence of Jane Austen, Daniel Defoe and Jean-Jaques Rousseau, whereas scientific discourse begins to be understood as being produced by collective authorship through the process of research, rather than an individual Author like Al Zahrawi.

Having said this, Foucault also states that the Author figure is a product of the reader's projection of their relationship with their work onto the Author themselves. This can be understood in diverse ways, but for the context of this exploration, projection can be seen as the act in which the Author's function is controlled by the meaning their work is given by a reader or power structure. Therefore, the Author figure is contained within subjectivity or imposed collective interpretation, depending

[30] Adam Gabbatt, '"Adults Are Banning Books, but They're Not Asking Our Opinions": Meet the Teens of the Banned Book Club', *The Guardian*, 7 February 2022, section US news <https://www.theguardian.com/us-news/2022/feb/07/banned-book-club-pennsylvania-animal-farm>.
[31] Jacob Grimm, Wilhelm Grimm, and Nora Kramer, *Grimms' Fairy Tales / Edited by Nora Kramer; Illustrated by Irma Wilde*, Scholastic Star Edition (New York: Scholastic Book Services, 1962).
[32] 'Theoretical and Practical Book by Al-Zahrawi.', *Library of Congress, Washington, D.C. 20540 USA* <https://www.loc.gov/item/2021666820/>.
[33] *Foucault's 'What Is an Author?'*, dir. by David M. Peña-Guzmán, 2023 <https://www.youtube.com/watch?v=3de0Fh4GcxU>.

on the nature of the work and the context within which it is consumed. This can, again, be related to the interpretation of Orwell's work within different political environments, where the Author and their work are perceived and interpreted through the lens of societal constraints and legal regulations, rather than through their raw form.

The fourth and final mode of categorization of an Author offered by Foucault is the multiple egos involved in creating and interpreting a work[34], separated into three levels. The fundamental level of ego attributed to an Author function is the Author persona who creates the work, the second level is the narrator within the work, and the third level is the multiple egos situated within different sections of the work, such as the introduction and conclusion egos. Foucault states that this plurality of ego is not exclusive to literature, but that it can be applied to any type of creative work, and further states that it helps decentralise the understanding of the Author as a persona, rather than a function. The reader cannot expect harmony between these egos, as they are not tied to each other through one identity[35].

To summarize and conclude this characterisation, Foucault introduces trans-discursive authorship, where the Author figure transcends the Author persona that creates the work. As an illustration, he provides Sigmund Freud and Karl Marx[36] - where Freud is considered the father of the discipline of psychoanalysis and therefore its Author and Marx's ideas from *Das Kapital* or *The Communist Manifesto* go further than their initial purpose but are always related to him as the Author. Therefore, both Freud and Marx take on the role of an Author Figure, rather than an individual Author persona.[37]

Roland Barthes' Answer in *The Death of the Author*

However, Roland Barthes was the first to propose the decentralisation of the Author in his essay *The Death of the Author*[38]. In contrast to the meaning and value of a work being rooted within the Author figure, Barthes proposes that they are derived from the audience's interpretation of the work, influenced by their formative experiences and belief systems. Michel Foucault's

[34] Foucault, p. 214.
[35] Peña-Guzmán.
[36] Foucault, p. 217.
[37] Ibid.
[38] Roland Barthes, 'The Death of the Author,' in *Image, Music, Text*, ed. by Stephen Heath, trans. by Stephen Heath (London: Fontana Press, 1977), pp. 142–48.

response to Barthes, although in agreement with a decentralised perspective, emerged subsequently, establishing Barthes as the trailblazer in questioning the Author's authority. Being heavily associated with anti-intentionalism[39] and post-structuralism[40], he suggests that the meaning of a text does not necessarily depend on the Author's intentions and that the Author's identity should be detached from the audience's interpretation of a work. This is evidenced through Barthes' rejection of Romanticism, which is widely considered as an outpouring of the Author's emotions. He believes that a text exists independently from the Author figure once it is published, and that its meaning is only complete once the text is read and individually interpreted.[41] However, Barthes also distances himself from Formalism[42], or more specifically, New Criticism[43] - while Formalists like Beardsley and Wimsatt[44] reject the Authority of Authorial intention, Barthes finds that view too dogmatic and argues that the Author still holds a certain amount of power in the interpretation of a work[45].

Barthes' proposal presents an intriguing perspective on the Author figure itself. Like Foucault, he rejects the notion of the Author as a singular, exceptionally creative entity. However, Barthes diverges by suggesting that the Author functions more as a collage maker[46], drawing upon narrative devices from pre-existing material and assembling those ideas uniquely and originally. He states that the figure of the Author is a modern phenomenon stemming from the Protestant Reformation when discourse started privileging the individua over the matter[47]. Instead of seeing a work or its meaning as a message injected independently by the Author, Barthes invites the reader to consider that the Author is not developing their work in a vacuum – but that they themselves have been influenced by a plethora of ideas, forms, and social structures, which have inevitably informed their work. This aspect of Barthes' ideas is interesting in comparison to Foucault's logic of appropriation since both agree that any type of work is shaped by external factors but disconnects regarding the nature of the influence itself. In his eyes, writing is a system

[39] A philosophical stance that rejects the importance of the Author's intention to the meaning a work carries.
[40] A set of theories that respond to and oppose structuralist principles, such as the reliance on binary oppositions.
[41] Barthes, p. 148.
[42] Formalism is a critical position in which the raw form of a work is its most valuable characteristic, the nature of its authorship.
[43] Barthes, p. 143.
[44] W. K. Wimsatt and M. C. Beardsley, 'The Intentional Fallacy', *The Sewanee Review*, 54.3 (1946), 468–88 <https://www.jstor.org/stable/27537676>.
[45] Barthes, p. 143.
[46] Barthes, p. 146.
[47] Barthes, p. 142.

of meanings that cannot be pinned down to a single intention, where, as opposed to Foucault, the 'proliferation of meaning'[48] is inevitable and encouraged.

In conclusion, rather than idolising the Author persona, Foucault emphasises the importance of the Author's function and establishes that the Author figure is always shaped by cultural and societal context. Through the concept of appropriation and the evolving nature of authorship over time, he evidences how legal, ideological, and societal changes influence our perception of the Author figure. Finally, Foucault decentralises the Author figure from the Author persona by characterising him within multiple egos. Comparably, but not identically, Barthes places the Author within a societal context, but for the purpose of detaching the Author from the work itself. He argues that since every work is a compilation of pre-existing matter ingested by the Author, and so forth should be interpreted without that underlying factor, giving the audience the power of bestowing meaning upon a work. Both theorists encourage a revision of traditionalist Author-centric views on authorship and call for a more contextual understanding of the complex relationship between the Author and the work, as well as the varied interpretations a work could carry. From this, the question arises of how their theories can be applied in the modern landscape of authorship, specifically in the context of creation by and co-creation with artificial intelligence in creative practices.

[48] Foucault, p. 221.

Chapter 3

Contextualising Foucault and Barthes within the Digital Age

While Foucault and Barthes predominantly write on the nature of authorship within the context of textual discourse, their theories remain highly relevant in the current emergence of authorial issues regarding artificial intelligence, specifically in creative practice. Recently, questions have arisen regarding the exponential increase in the use of artificial intelligence in creative industries, such as matters on intellectual property, namely authorship and ownership, creativity,[49] and the ethical considerations of the use of artificial intelligence, including algorithmic bias.[50] This chapter aims to interrogate some of these issues for a more comprehensive understanding of their nature and causes, as well as an inquiry into what the future of these issues and artificial intelligence in creative industries might hold.

Commodification and Copyright

One of the main things Foucault emphasises in *What is an Author?* is that authorship is heavily influenced by societal and economic factors, which can shape and reshape our perceptions of who or what is considered an author very easily. This aligns closely with the current developments in the field of artificial intelligence, specifically in generative artificial intelligence, where the term 'authorship' is loosely tied to the machine, depending on the industry it is being used in and how stakeholders in power want it to be perceived. This is evidenced by the inconsistency of what is considered copyrightable artwork if artificial intelligence is involved in its creation, which is interrogated in this chapter through the cases of the copyright legislature within the United States.

Case 1: The United States Copyright Act

The United States Copyright Act was first published in 1976, and the last amendments to it were made on December 23rd, 2022[51] - yet the copyrighting of artwork produced by or with artificial intelligence remains a grey area. The law does not directly address works

[49] Martin Zeilinger, *Tactical Entanglements: AI Art, Creative Agency, and the Limits of Intellectual Property* (meson press, 2021), p. 9 <https://doi.org/10.14619/1839>.
[50] Caroline Criado Perez, *Invisible Women: Exposing Data Bias in a World Designed for Men*, 1st edition (London: Chatto & Windus, 2019), p. 33.
[51] *Copyright Law of the United States*, *United States*, 1958, XVII.

created independently by a computer, which leaves the matter open to interpretation and questioning by the public, courts, and media.[52] To investigate this, author Kalin Hristov divided artwork generated by artificial intelligence into two categories: creations with direct input or assistance from human beings, where the human artist guides the machine with expectations in mind, and where artificial intelligence is used for a set goal;[53] and creations where the machine is allowed to produce work autonomously using randomness instead of prompts from the human.[54] To give an example of the first category, Hristov uses photography:

Case 1.1.: *Cf. Burrow-Giles Lithographic Co v. Sarony*

When photography was first introduced in the 1820s[55] it was, at best, considered as a tool for replicating paintings. It was generally thought that photography lacked "that refined feeling and sentiment which animate the productions of a man of genius,"[56] which is an interesting notion to compare to Barthes' rejection of the thought that a work inherently needs to carry the Author's emotions to be considered meaningful, and Foucault's rejection of the Author as an infinitely creative and original being. Nevertheless, photography could not be fully deemed an art form because it was considered to be purely a mechanical process, even by those advocating for it.[57] In *Cf. Burrow-Giles Lithographic Co v. Sarony*, 111 U.S. 53 (1884)[58] the court considered the camera used by Sarony to capture Oscar Wilde's image as a tool that assisted the "Author" in the creation process of "an original work of art." A similar procedure is used in copyrighting artworks made with the assistance of artificial intelligence today – under the logic that a camera or a smartphone is a tool for the creation of an artwork by a human Author, artificially generated artworks which have been prompted and curated by human Authors can be copyrighted under their name.[59]

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[52] Kalin Hristov, 'Artificial Intelligence and the Copyright Dilemma' (Rochester, NY, 2016) <https://papers.ssrn.com/abstract=2976428> [accessed 7 November 2023].
[53] Hristov, p. 435.
[54] Hristov, p. 436.
[55] Jordan G. Teicher, 'When Photography Wasn't Art', *JSTOR Daily*, 1AD <https://daily.jstor.org/when-photography-was-not-art/>.
[56] 'Photography', *The Crayon*, 1.11 (1855), 170–170 (p. 170) <https://www.jstor.org/stable/25526906>.
[57] Bernard F. Reilly, 'The Early Work of John Moran, Landscape Photographer', *American Art Journal*, 11.1 (1979), 65–75 <https://doi.org/10.2307/1594133>.
[58] Jane Ginsburg, 'Burrow-Giles v. Sarony (US 1884): Copyright Protection for Photographs, and Concepts of Authorship in an Age of Machines', *Faculty Books*, 2020 <https://scholarship.law.columbia.edu/books/297>.
[59] *Copyright Law of the United States*, XII.

Hristov's second category is where the 'grey area' emerges. When it comes to artworks autonomously generated by artificial intelligence, therefore having a "non-human author,"[60] the human owner of the source code may copyright the code itself,[61] but the artwork will go into the public domain unless directly manipulated by a human author.[62] This includes both autonomously created works and works created based on randomness.[63] The question is where the margin between 'human' and 'non-human' authorship lies. This issue was raised in *Naruto v. Slater*[64], better known as the 'monkey selfies' case:

Case 1.2.: *Naruto v. Slater*

Naruto v. Slater emerged after an Indonesian crested macaque called Naruto triggered the shutter on photographer David Slater's camera, taking selfies of itself [fig. 1]. The photographer had previously adjusted the camera settings and left the camera intentionally unattended for the macaques' convenience.[65]

Figure 1: David Slater, *Monkey Selfie*, 2011.

[60] Melville B. Nimmer, *Nimmer on Copyright; a Treatise on the Law of Literary, Musical and Artistic Property, and the Protection of Ideas.* (Albany: M. Bender, 1963).
[61] *Copyright Law of the United States*, XVII.
[62] U.S. Copyright Office, *Compendium of U.S. Copyright Office Practices* § 101 (3d ed. 2021).
[63] Hristov, p. 436.
[64] Naruto v. Slater, 2018.
[65] Hristov, p. 448.

Subsequently, Slater licensed the photographs under his name but was challenged in United States court by People for the Ethical Treatment of Animals (PETA) under the premise that the macaque who had taken the photos should hence be their owner. The case was dismissed since the monkey, as a non-human, lacked statutory standing[66] to claim copyright infringement of the photographs even though animals do have constitutional standing under Article III of the United States Constitution, and the photos were sent to the public domain. After appeals, the case was finally settled in 2018 with the parties releasing a joint statement:

> "PETA and David Slater agree that this case raises important, cutting-edge issues about expanding legal rights for nonhuman animals, a goal that they both support, and they will continue their respective work to achieve this goal."[67]

As a result, David Slater agreed to donate one-quarter of any proceeds from the photographs toward charities that protect Indonesian macaques.

Slater and PETA's case summarizes the issue of 'human' and 'non-human' authors very well. The most recent Compendium of Best Practices by the U.S. Copyright Office states that copyright will only be given to human authors, but *Naruto v. Slater* is an excellent example of how the issue of human authorship is not as exclusive as it used to be. In the age of emerging generative artificial intelligence artworks, more leeway should be given toward which standard the term 'human author' is held to. Hristov supports this by suggesting that immediately putting artworks created by autonomous artificial intelligence machines into the public domain will give human authors of source code for said machines less incentive[68] to continue creating them. Denying human authors ownership of said artworks would lead to a decline in the development of artificial intelligence and machine learning as an industry, and as a result, a decline in technological innovation as a whole. However, a limited period of copyright protection would allow human and corporate owners of artificially generated artwork to enjoy its financial benefits, which would successively lead to continued creation and innovation in the field. This is evidenced in *Sony Corp. of Am. V. Universal Studios, Inc.*

[66] Susannah Cullinane, 'Monkey Does Not Own Selfie Copyright, Appeals Court Rules', *CNN*, 2018 <https://www.cnn.com/2018/04/24/us/monkey-selfie-peta-appeal/index.html>.
[67] Cullinane.
[68] Hristov, p. 438.

Case 1.3.: ***Sony Corp. of Am. V. Universal Studios, Inc.***

The 1984 case of *Sony Corp. of America v. Universal Studios, Inc*. came as a result of Sony's invention of the Betamax video tape recorder. Universal Studios sued Sony for contributory copyright infringement, stating that they contributed to infringement made by Betamax customers while recording television programming on their cassettes. In the case, the Court determined that the act of recording copyrighted television programs in one's own home is considered "fair use" and therefore does not infringe upon the Copyright Act.

The Supreme Court's ruling stated that copyright holders (in this case Universal Studios) held exclusive rights to their work, but that reproduction of said work was permitted if under "fair use." This referred to the "fair use doctrine," which encompasses this concept and was codified in the Copyright Revision Act of 1976.

The ruling concluded that copyright ownership offers financial benefits to motivate authors and inventors and provides an incentivising reward for a limited amount of time. This limited period of exclusive control allows the public access to the creative products after the copyright has expired.

The term 'authorship' within the context of artworks created by and with artificial intelligence should be redefined to include both 'human' and 'non-human' authors. 'Non-human' authors cannot be held responsible in a court of law, and therefore, the answer might lie in allowing legal statutory rights for 'non-human' authors, including machines, and transferring those rights onto their human or corporate owners. The U.K. Copyright Code[69] has already done this. However, transferring copyright does not come without its shortfalls, as questions might arise regarding whether an employee of a corporation or the corporation itself would hold the rights to the artwork or even the end user of the artwork. Hristov suggests the party contributing most[70] to the development of the artwork.

Bringing this back to Foucault and Barthes – issues on originality, ownership and authorship are universal – especially in newly developing fields. When Foucault questions whether everything left behind by an Author is part of their authorial legacy[71], it begs the question of how artificially

[69] Copyright, Designs and Patents Act, 1988, c. 48, § 9(3)
[70] Hristov, p. 443.
[71] Foucault, II, p. 207.

generated art and artists working with machines will be perceived in the future. If we consider Marx as the foundation for communism and refer all subsequent, branching schools back to him as the elementary Author, why are makers of code for autonomous creative machinery not viewed the same way? Could the issue lie in traditionalism, where new media is disregarded in the face of conventional, time-honoured art forms? Barthes touches on this premise when writing on the emergence of the "prestige of the individua,"[72] or even "positivism"[73] – one of the best examples of capitalist ideology, where objective knowledge can only be derived from the authority of the individual, the fundamental source of value and ownership. His advocacy for an interpretation-centred approach to literature review echoes in the new media landscape, especially in that of artificially generated art. The focus needs to shift away from the nature of the work's authorship onto the work itself. Both Foucault's and Barthes' calls for the democratisation of work are incredibly relevant today, and therefore the human concept of valuing artwork must be broken down and re-evaluated to gain an understanding of how that perspective might change with the exponentially rising development of generative and human-decentralized artwork.

[72] Barthes, p. 142.
[73] Barthes, p. 143.

Chapter 4

Democratisation by Corporate Monopoly

Democratisation to Mass Production

While Foucault can be applied when examining commodification and legal agents that affect work made by or with artificial intelligence, Barthes focuses on the creatively influencing factors – but both Barthes and Foucault are right in their theories. As stated previously, the use of artificial intelligence in the creative industry is a dynamic and rapidly developing field, and hence susceptible to a myriad of influences, opinions, legal considerations, commodification, and subject to a lot of media scrutiny, which in results quickly sways public perceptions of it. Therefore, power structures such as major technology corporations attempt to monopolize[74] the narrative on artificial intelligence by coming up with easily accessible generative artificial intelligence models, which will as a result form the general public's opinion on artificial intelligence as a creative entity.

Grant Kester explores the influence of major power structures on art in *The One and the Many: Contemporary Collaborative Art in a Global Context*[75]. While stating that the figure of a genius individual Author is the foundation of modernist art[76], he also acknowledges that the contemporary political climate allows for permeability in our preconceived notions of art and inspires a growing interest in collaborative art.[77] Although written in 2011, the book echoes the economic and political developments of today, especially regarding the impact of capitalism and the American political climate[78] over generative artificial intelligence technologies. Today, these technologies are falling victim to neoliberal capitalism[79], where major corporations command and control the artificial intelligence market. This creates a centralised corporate monopoly over generative artificial intelligence, highlighting that open access to such technology does not equal their democratisation. Such is the example of Open AI, a startup that has taken over the generative AI field in recent

[74] Council of Europe, *E-Relevance: The Role of Arts and Culture in the Age of Artificial Intelligence* (Council of Europe, 2021), chap. 1, p. 12.
[75] Grant H. Kester, *The One and the Many: Contemporary Collaborative Art in a Global Context* (Duke University Press, 2011) <https://doi.org/10.2307/j.ctv11smfch>.
[76] Kester, *The One and the Many*, p. 3.
[77] Kester, *The One and the Many*, p. 7.
[78] Nick Robins-Early, '"An Evolution in Propaganda": A Digital Expert on AI Influence in Elections', *The Guardian*, 20 July 2023, section US news <https://www.theguardian.com/us-news/2023/jul/20/artificial-intelligence-us-elections>.
[79] Kester, *The One and the Many*, p. 5.

years with models such as Chat GPT. Sam Altman, the company's CEO, has openly called for government regulation[80] of the artificial intelligence industry in the face of 'increasingly powerful' models, but the question arises: if publicly accessible models are fully controlled and regulated by corporations and governments, can they be considered democratic? Relating this to Kester, such an occurrence would cause a loss in legitimacy[81] in the eyes of the public for these power structures, which would consequently inspire independent, collaborative approaches to generative artificial intelligence. In his mind, the greatest transformations in art occur when its very identity[82] is brought into question.

At the same time, in *The Democratization of Artificial Intelligence*[83], Jens Schroeter proposes that universal democratized artificial intelligence is not possible[84], regardless of the publicity surrounding it recently. He applies this theory to artificial intelligence in creative practice specifically – relating democratization to the commodification of goods[85]. Much like Foucault's theories on literature, Schroeder sees the democratization of artificial intelligence as a precursor to the commodification and subsequent mass production of generative artworks. In his eyes, machines creating artwork adds another angle to the discourse on the automation of work itself and the publicly perceived threat it poses to human employment – he argues that artists would be one of the professions least affected by smart machine automation. However, Schroeder also argues that mass production and the industrialization of artwork production will bring forward the downfall of auratic works of art made by rare individuals and that the prices of art will significantly decrease.

Contrary to Schroeder and drawing upon the findings regarding authorship and the arguments made by Kester, there is potential for a new type of aura to emerge from mass production and the full open access of generative artificial intelligence – where innovative and outstanding artists rise from the pool of users experimenting with AI platforms. In this alternative scenario, new forms of

[80] Johana Bhuiyan, 'OpenAI CEO Calls for Laws to Mitigate "Risks of Increasingly Powerful" AI', *The Guardian*, 16 May 2023, section Technology <https://www.theguardian.com/technology/2023/may/16/ceo-openai-chatgpt-ai-tech-regulations>.
[81] Kester, *The One and the Many*, p. 6.
[82] Kester, *The One and the Many*, p. 7.
[83] *The Democratization of Artificial Intelligence: Net Politics in the Era of Learning Algorithms (Edition 1)*, ed. by Andreas Sudmann (transcript Verlag, 2019) <https://doi.org/10.14361/9783839447192>.
[84] Sudmann, p. 297.
[85] Sudmann, p. 304.

creativity and artistic expression will be able to stem from the democratization of generative algorithms. Allowing open access to generative artificial intelligence to all will allow for a more diverse demographic of users to develop, train and output artificial intelligence content, challenging traditional preconceptions of who is considered an Author or artist. Coming back to Foucault – the democratization of AI would cause a gradual disruption of current corporate power structures' monopoly over who creates generative art and how, as more users will be able to develop their own generative algorithms and works of art.

Democratization could also lead to a new death of the Author; similar to theories proposed by Barthes. As artificial intelligence becomes more accessible, we could see the authority of the human creator blend in with collaborative workflows in which the human and machine are equals. Rather than being viewed as an entity that supersedes human creativity, but a peer or collaborator to the human, generative artificial intelligence will echo Barthes' opinion that the meaning of a work of art cannot be fully moulded by the Author themselves. However, for this to be achieved it is essential for artificial intelligence to stop being viewed as mysterious or inaccessible, but as an artist's assistant, as Salaì was to Leonardo da Vinci. This requires a sharp shift in the public perceptions propagated by large-scale corporations, where users are unable to gain knowledge of what is behind the platforms they create on, therefore forming uneducated conclusions on the nature of generative artificial intelligence. Allowing open access to the workflows and code behind algorithmic art will be a catalyst for the development of new creative practices and the emergence of new contemporary great artists.

It is important to understand that although corporate monopoly is the leading cause for the mysticism surrounding generative artificial intelligence, it will also be its downfall. Open access will familiarise the public with artificial intelligence, but it will likewise inspire individual endeavours into the creation of generative algorithms independent from the structure of corporate generative artificial intelligence platforms. However, before that happens it must be addressed that the same monopoly held by corporate entities, as well as democratized public access to generative artificial intelligence platforms owned by said corporations opens space for algorithmic bias and data privacy issues, as users go through vast amounts of data to train and utilise models, which can and often does lead to ethical pitfalls.

Mass Production to Ethical Pitfalls

In examining the democratization and rise of mass media in contemporary times, it is crucial to initially consider the impact of digitalization on its origins. It can be argued that the beginning of media as we know it today started following the Second World War and the emergence of computers.[86] The potential for large storage and processing capabilities, as well as the low costs of production, made technology much more accessible to larger numbers of people – therefore triggering the democratization of knowledge we experience today. This worldwide flow of information has been greatly aided by globalisation and capitalism, as well as the decentralisation of television and radio in the 20th century, and the digital media advancements of the 1990s.

This aligns with Marshall McLuhan's theories of the global village[87] – the world becoming increasingly interlinked through the development of electronic technology, namely television and radio. His theories, however, can still be easily applied to the context of contemporary new media and generative artificial intelligence. McLuhan argued that the development of electronic media would collapse the cultural and spatial boundaries in the world, fostering the exchange of shared experiences and knowledge globally. A global village would enable the swift exchange of knowledge and ideas across the globe. McLuhan theorized that electronic media, especially television, would foster greater compassion and empathy among cultures, and faster development of said technologies. When applied to today's advanced communication technologies such as the internet, artificial intelligence and social media, McLuhan's statements cannot be as easily sustained as they would be in the context of the mediums he talked about, which we now consider traditional media. While widespread use of the internet has been a key factor in the significant evolution of globalisation in the past thirty years, it has also sparked various social challenges. Perhaps the most widespread occurrence resulting from the democratization of the internet would be the Westernisation of media as a whole, where Western cultural norms, beauty standards and political phenomena have caused a homogenization of the content absorbed. McLuhan's vision of a global village in the context of the internet was supposed to promote cultural diversity and

[86] 'Media and Society', ed. by James Curran and David Hesmondhalgh, 2019, p. 2 <https://doi.org/10.5040/9781501340765>.
[87] Marshall Mcluhan and Lewis H. Lapham, *Understanding Media: The Extensions of Man*, Reprint edition (Cambridge, Mass: MIT Press, 1994).

understanding but is instead providing a platform for marginalisation, where social issues of the Global West are prioritised over those of the Global East, and where it is easy and accessible to promote radically exclusive views such as racism and sexism. These consequences of globalisation are starting to transpire increasingly in the world of Big Data[88] and generative artificial intelligence, with instances such as the *ImageNet Roulette*[89] controversy causing doubts among the wider public about the true nature of these technologies.

ImageNet Roulette was an experiment developed by artist Trevor Paglen and academic Kate Crawford to shed light on the concerning labels and classifications applied to images in the ImageNet dataset, which is easily considered one of the most impactful training sets in artificial intelligence. Users of the app would post photos of themselves to be labelled according to the dataset's usual methods, which resulted in often racist, misogynist and overall problematic outcomes. But that is the exact result Paglen and Crawford were looking for – to show how unregulated problematic training gives rise to problematic technological systems and can have big implications for underrepresented groups of people.

Algorithmic bias reflects existing social inequality and bias, further propagating discriminatory practices happening in human lives daily. It is a rising issue in the world of artificial intelligence, permeating datasets across the field. While it transpires in many forms such as racial, economic and ethnic, I will be drawing focus to gender-biased algorithms. Gender bias in artificial intelligence has garnered much media attention in recent years due to large-scale controversies such as the Amazon recruiting algorithm[90] discriminating against women, but also because it overlaps with other types of algorithmic bias to create an ever-threatening set of prejudices against marginalised groups of people.[91] This occurrence jeopardises the potential for an inclusive and fair digital environment for all, which has led author Caroline Criado Perez to interrogate how prejudice and social inequality are echoed in data systems, including those in generative artificial intelligence.

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[88] Big Data is a range of different technological phenomena, but in this context, it is seen as a collection of advanced digital techniques designed to interpret and find patterns in human behaviour.
[89] 'Excavating AI', - <https://excavating.ai>.
[90] Jeffrey Dastin, 'Insight - Amazon Scraps Secret AI Recruiting Tool That Showed Bias against Women', *Reuters*, 11 October 2018, section World <https://www.reuters.com/article/idUSKCN1MK0AG/>.
[91] Ziad Obermeyer and others, 'Dissecting Racial Bias in an Algorithm Used to Manage the Health of Populations', *Science (New York, N.Y.)*, 366.6464 (2019), 447–53 <https://doi.org/10.1126/science.aax2342>.

Perez's book *Invisible Women*[92] interrogates the increasingly relevant issue of gender discrimination that permeates and has lasting effects on the daily lives of women, including the artificial intelligence industry. Algorithmic bias is only one of the examples where 'male-unless-otherwise-indicated'[93] is the norm, especially when coming to the realisation that this premise is embedded as deeply as the nature of language itself. In 2016 an analysis[94] of a Google News dataset found that among the top gender-linked occupations for women were homemaker, nurse, nanny, and socialite – while for men those included maestro, warrior, captain, architect, and financier.[95] Accompanying this was extreme analogies along the she-he gender direction[96] showing discrepancies in social roles such as nurse-surgeon, feminism-conservatism, interior designer-architect [fig. 2].

Extreme *she*	**Extreme *he***
1. homemaker	1. maestro
2. nurse	2. skipper
3. receptionist	3. protege
4. librarian	4. philosopher
5. socialite	5. captain
6. hairdresser	6. architect
7. nanny	7. financier
8. bookkeeper	8. warrior
9. stylist	9. broadcaster
10. housekeeper	10. magician

Gender stereotype *she-he* analogies

sewing-carpentry	registered nurse-physician	housewife-shopkeeper
nurse-surgeon	interior designer-architect	softball-baseball
blond-burly	feminism-conservatism	cosmetics-pharmaceuticals
giggle-chuckle	vocalist-guitarist	petite-lanky
sassy-snappy	diva-superstar	charming-affable
volleyball-football	cupcakes-pizzas	lovely-brilliant

Gender appropriate *she-he* analogies

queen-king	sister-brother	mother-father
waitress-waiter	ovarian cancer-prostate cancer	convent-monastery

Figure 2: The most extreme occupations and automatically generated analogies for she-he gender direction.

Linguistic male-centric bias is an issue which bleeds into training computer algorithms, especially when those biases are coming from large-scale corporations such as Google and their datasets. Perez argues that this bias is not intentional[97] or malicious but rather a product of a millennia-old societal norm of men being the default, which is now resulting in unreliable Big Data that misrepresents and often fails to include half of the world's population. Corrupted Big Data leads to corrupted algorithms, which leads to corrupted computers showcasing large gender data gaps.

[92] Perez, p. 1.
[93] Perez, p. 17.
[94] Tolga Bolukbasi and others, 'Man Is to Computer Programmer as Woman Is to Homemaker? Debiasing Word Embeddings', in *Advances in Neural Information Processing Systems* (Curran Associates, Inc., 2016), XXIX <https://proceedings.neurips.cc/paper_files/paper/2016/hash/a486cd07e4ac3d270571622f4f316ec5-Abstract.html> .
[95] Bolukbasi and others, XXIX, p. 2.
[96] Ibid.
[97] Perez, p. 11.

In the age of artificial intelligence assisting in medicine and employment, the gender data gap has become even more prominent and there is no way to examine whether large corporate systems take this gap into account when training their algorithms.

Algorithmic bias toward men, together with the systemic normalisation of men as the default perpetuates large gaps in gendered datasets, causing issues surrounding the ethics and inclusivity of artificially intelligent models designed by major corporations such as Google, Adobe, OpenAI and others. This includes generative artificial intelligence used in the creative industries, where even gender-neutral prompting favours white men.

Case 2: Gender Bias in Generative Artificial Intelligence

To test how common this occurrence was in algorithms created by major corporations, I prompted two text-to-image generative artificial intelligence models, created by Adobe and Runway respectively, ten times. The objective was to interrogate how gender-biased these two artificial intelligence models would be and to shed light on how transparent corporate systems are about the content of their datasets and the nature of their algorithmic models. By utilising gender-neutral prompting the aim was to give the algorithms space to portray human activity based on the datasets they were trained on without explicit instructions on gender identity. The use of eating as an activity was intentional, as it is a common human activity and one can assume there are numerous examples of this in the databases provided.

Case 2.1.: Adobe Firefly

Firefly, Adobe's generative artificial intelligence model is trained on the Adobe Stock image dataset, openly licensed content, and public domain content with expired copyright. The firm claims to be "standing up for accountability, responsibility, and transparency"[98] in generative artificial intelligence, and that their data is regulated to reduce bias and prevent discrimination in their outputs.

However, when prompted to generate images of a 'person eating a sandwich', Firefly depicts 75% of results with male-perceived faces [fig. 3].

[98] 'Adobe Firefly - Free Generative AI for Creatives' <https://www.adobe.com/products/firefly.html>.

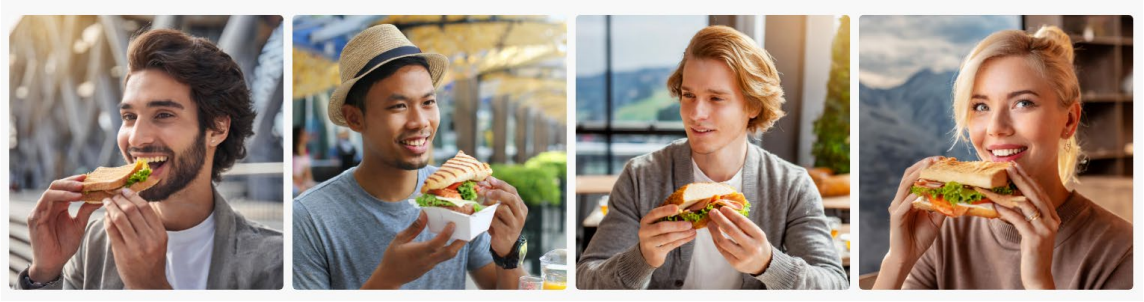

Figure 3: Firefly image generation results.

When prompted ten times with the same phrase, Adobe Firefly depicted male-perceived faces as equally or dominantly present in 70% of the generated content. In total, 57.5% of the generated images contained male-perceived faces, compared to 42.5% of female-perceived faces [fig. 4].

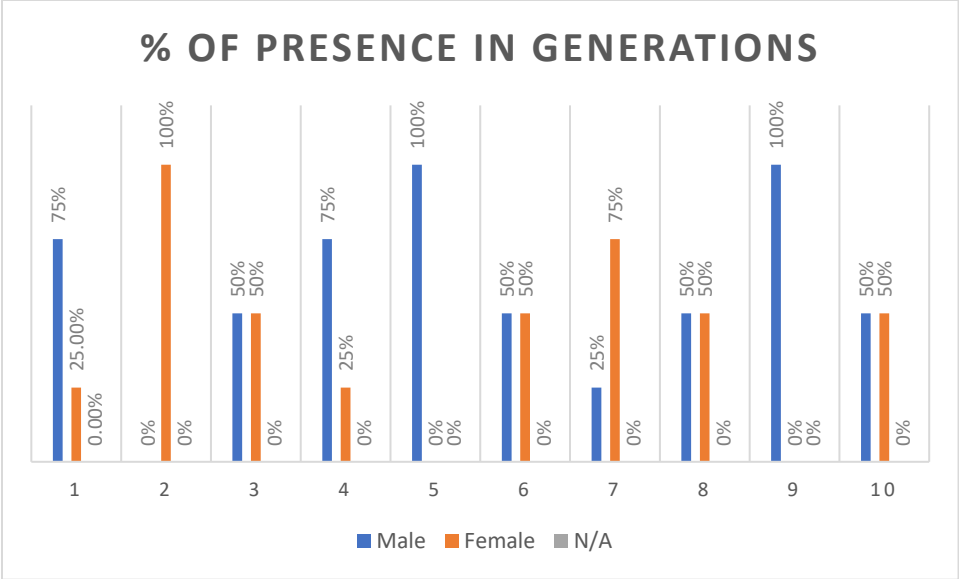

Figure 4: Percentage of male and female perceived faces in Firefly text-to-image generator.

The obvious question arises of how regulated the model actually is if the images generated by Firefly are not as diverse as Adobe claims them to be. Echoing back to Perez's research into gender data gaps, attempts to create a gender-neutral-friendly algorithm still fail to address the issue of (perhaps unintended) male bias in generative artificial intelligence. Examples like this emphasize the need for minimising gender bias in artificial intelligence systems and the need for a more regulated and inclusive method of selecting and creating databases generative artificial intelligence models are trained on.

Case 2.2.: Runway

A similar issue arises with content generated with the text-to-image model in Runway, an online platform specializing in generative artificial intelligence. Runway seeks to make artificial intelligence more accessible in the creative sector through a wide range of features tailored for those with limited knowledge of machine learning or coding. Being aware of potential algorithmic bias, Runway highlights their method of finetuning their models based on diverse synthetic data including a range of genders, ethnicities, and age groups. The Diversity Finetuned (DFT)[99] model improves perceived gender by 97.7% according to Runway – generating more images of women when prompted compared to before the system was implemented.

Figure 5:Runway image generation results.

However, when given the same prompt as Adobe Firefly, Runway's text-to-image model outputs three images depicting male-perceived faces and one image with no faces in it whatsoever [fig. 5].

When prompted ten times with the same phrase, male-perceived faces are the equal or dominant demographic in 80% of generations, compared to 30% female-perceived faces. In total, male-perceived faces appeared in 45% of generated images, no faces were shown

[99] 'Mitigating Stereotypical Biases in Text to Image Generative Systems | Runway Research', *Runway* <https://research.runwayml.com/publications/mitigating-stereotypical-biases-in-text-to-image-generative-systems>.

in 37.5%, and female-perceived faces appeared in a mere 17.5% of generated images [fig. 6] – a staggering testament to how biased Runway's text-to-image model is, even after implementing measures to significantly reduce gender-based algorithmic bias in their models.

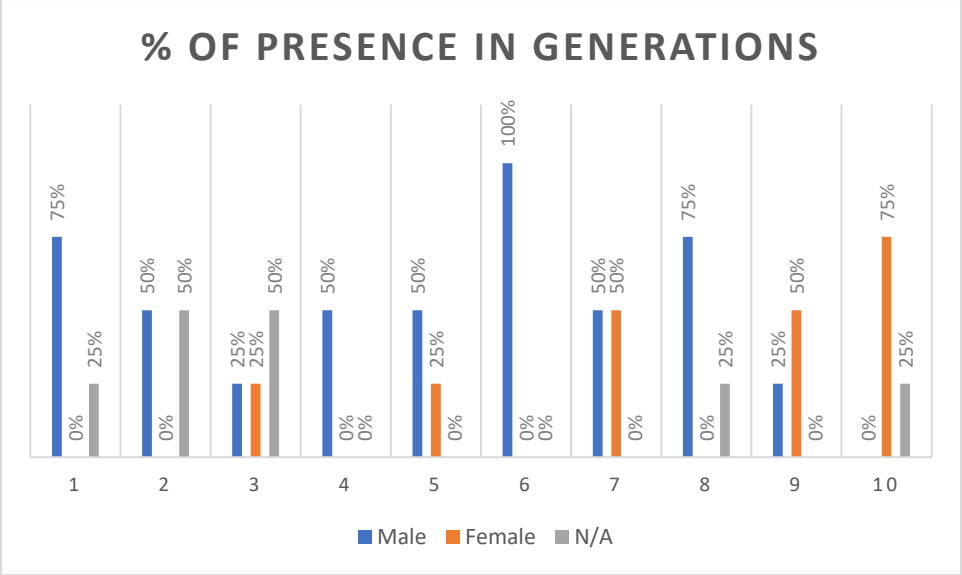

Figure 6: Percentage of male and female perceived faces in Runway text-to-image generator.

Again, one cannot ignore the question of whether these methods of regulation actually operate outside of a controlled environment, or whether major corporations are fully transparent in their findings. Bringing this back to Perez, gender biases are highly present in artificial intelligence systems because they are a deeply rooted phenomenon in global society.[100] As generative images produced by artificial intelligence become increasingly present on the global scene, there is an ever-present need for regulatory frameworks in order to ensure transparency, accountability, and a more diverse database for image generation.

Caroline Criado Perrez's *Invisible Women* leaves the reader with an important but not universally apparent realization that the normalization of societal bias is a frequent occurrence in data and algorithmic structures[101] and, ultimately, reflects society in itself.

[100] Perez, p. 15.
[101] Perez, p. 146.

The preconception of ‘male-unless-otherwise-indicated’ is embedded in Big Data overall but is particularly evident in generative artificial intelligence models such as the Adobe Firefly and Runway text-to-image generators. Data bias in algorithmic structures, inadvertently or not, fails to represent the full spectrum of the world’s demographic composition and as a result, manifests in the new media industry being seen as perpetuating discrimination and sexism.

This, however, is also a result of the influence of major power structures such as corporations on the generative artificial intelligence space. As Foucault states, power comes through the manipulation of knowledge and public dialogue[102] with the aim of moulding societal norms. Corporate systems like Adobe and Runway are able to control the conversation around algorithmic bias oversights as long as they hold a monopoly over the market and their datasets and algorithms remain closed source.[103] Ergo, the significant influence that these corporations hold over the datasets, algorithms, and outputs of their AI models contributes to the perpetuation of biases and exclusionary practices. By applying Foucault's theories and contextualizing them within the world of artificial intelligence, one can better understand how these power structures influence the discourse on AI, shaping ethical considerations and regulatory frameworks.

Moreover, Roland Barthes' perspectives on the formation and interpretation of art offer an additional level of consideration when it comes to this issue. Barthes' theories on the Author's function in constructing meaning in literature can be expanded to encompass the domain of generative art created by artificial intelligence. Just as Barthes questions the idea of the Author as the exclusive authority on interpreting a text, the discourse surrounding generative AI models prompts inquiries into authorship and autonomy in creative procedures. The biases present in AI-generated art provoke inquiry into who bears accountability for the results and how these creations are perceived by viewers. Barthes' concepts prompt us to scrutinize the power dynamics inherent in AI-generated art and

[102] Foucault, II, p. 216.
[103] Closed source stands for code that is not shared with the public and is unable to be looked at or edited.

contemplate the repercussions for authorship, creativity, and the public perception of generative works of art.

To summarize, the convergence of Caroline Criado Perez's examination of gender data biases, Michel Foucault's theories on appropriation and power, and Roland Barthes' perspectives on authorship and interpretation offer a comprehensive framework for understanding the biases and ethical aspects of AI-generated art. By utilizing these theoretical viewpoints, one can analyse the influence of AI technologies on creativity, representation, and societal standards critically, and strive for more inclusive and fair approaches in creating and implementing AI systems.

Chapter 5

What is Next for Creative Artificial Intelligence?

Artificial intelligence as a creative entity has taken a trajectory of evolution unlike any art form in the past, and that is improbable to change going forward. While it is easy to draw parallels between photography, Foucault, capitalism and generative artificial intelligence, the novel element of autonomy in algorithms adds another layer to the complexity of public perception of artificial intelligence, challenging traditional notions of authorship, ownership, and creativity that society is accustomed to. However, before further technological advancements are made, the issue of ethics and algorithmic bias must be addressed to ensure a fair and accessible creative environment for all. It is important to interrogate how the commodification and democratization of artificial intelligence, amplified by major corporate systems, impacts the creation of datasets, training of algorithms, creative outputs and, resultingly, public perception of generative artificial intelligence as a whole. The need for a more diverse and transparent system is becoming more imminent in order to understand the full plethora of challenges and opportunities facing this industry's future.

The United Kingdom and New Zealand have already started making steps toward the regulation of artificially generated art, more specifically art that is created autonomously by a computer. According to the United Kingdom Copyright, Designs and Patents Act[104], if a work of art is created by a computer in such a way that there is no human interference the copyright and ownership are automatically transferred to "the person by whom the arrangements necessary for the creation of the work are undertaken."[105] Therefore, if an artificial intelligence algorithm were to generate a piece of art based on randomness rather than prompts made by a human artist or user, the copyright would fall to the person responsible for writing the algorithm itself. This approach not only gives credit to the originator of the algorithmic system but also incentivizes others to innovate and develop the generative artificial intelligence industry further. However, this legal framework still doesn't address the copyright of autonomously created artwork within firms and corporations.

[104] Expert Participation, 'Copyright, Designs and Patents Act 1988' (Statute Law Database) <https://www.legislation.gov.uk/ukpga/1988/48/contents>.
[105] Participation, c 48.

The regulation of data bias remains a grey area globally. While corporations such as Adobe are actively working on reducing gender and race-based inconsistencies in their training datasets,[106] one cannot help but question whether full regulation of this issue will ever be possible. Looking at the example of the ImageNet database, in which images were labelled by human workers, it can be said that the labels and categories and subsequently the training algorithms themselves reflect the biases and prejudice that have always been present in society. Thus, how can it be expected for a computer algorithm to differentiate between appropriate and insensitive content it generates if its foundations (i.e. training datasets) are deeply discriminatory? Issues like this run much deeper than artificial intelligence platforms, and therefore it is unfair to criticise and undermine the creative and innovative possibilities of such systems before conducting a comprehensive introspect into the societal shortcomings that have reflected on said systems and possibly hindered their development.

Symbiosis of Artist and Artificial Intelligence

Revisiting Grant Kester's work – it is at times like these, when artistic freedom is most at risk, that space opens for new visions and techniques.[107] Kester theorised that political and economic instability, alongside social inequality, eventually lose their legitimacy in the creative sphere and inspire a rise in collaborative approaches in contemporary art. He is a large proponent of dialogic aesthetics[108] - a framework which emphasises collaboration, exchange and non-hierarchal relationships within artistic practice, arguing that the artist as an entity independent of their audience is inadequate when it comes to addressing contemporary sociopolitical issues. Further, Kester believes that allowing for diverse artistic voices in a participatory creative environment has the potential for significant ethical and political engagement and promotes a more democratic approach to artistic creation.

Much like Kester's theories on the impact of instability on art, independent AI artists today are distancing themselves from major datasets like ImageNet and corporations like Adobe, constructing personalised artificial intelligence algorithms specialised for their art practice. Such is the example of artist Sougwen Chung, who aims to interrogate the collaborative relationship

[106] 'Adobe Firefly - Free Generative AI for Creatives'.
[107] Kester, *The One and the Many*, p. 7.
[108] Grant H. Kester, *Conversation Pieces: Community and Communication in Modern Art, Updated Edition with a New Preface*, 2013.

between the human and machine.[109] Chung's work encompasses performance, drawing, still images and installation; exploring mark-making to understand the dynamics between humans and systems. The artists trains neural networks based on decades of their own abstract drawings, which they subsequently use to build drawing robots. They describe the robots as companions in their work and emphasise the non-hierarchical dynamic between them – echoing Kester's work on dialogic aesthetics. Chung is only one of many examples of an increasing number of artists creating with machines as peers, perhaps foretelling the future development of generative art as an independent art form.

Case 3: Sougwen Chung

While the pieces made by Chung's algorithms are based on different techniques like computer vision[110] and deep learning[111] and are displayed through many mediums such as code, live performance, and sculpture[112] – I will be drawing focus to *Drawing Operations Unit: Generation 2* (2015-2016) – further referred to as D.O.U.G_2, although Chung has now developed a fifth version of the piece. The reason behind this is that it can be argued that D.O.U.G_2 resembles models like DALL-E in that they are both products of image-based data sets and deep learning but differ in that their datasets were created with completely different purposes in mind.

The dataset D.O.U.G_2 is trained on was formed from twenty years of Chung's hand drawings, which are transformed into machine-readable paths. The artist calls it "an initial exploration into the machine learning of the drawing style of the artist's hand."[113] Generation 2 is generated by neural networks trained on said drawings, which lead the robot to form its own drawing gestures.

[109] Sougwen Chung, 'Sketching Symbiosis: Towards the Development of Relational Systems', in *The Language of Creative AI: Practices, Aesthetics and Structures*, ed. by Craig Vear and Fabrizio Poltronieri, Springer Series on Cultural Computing (Cham: Springer International Publishing, 2022), pp. 259–76 <https://doi.org/10.1007/978-3-031-10960-7_15>.
[110] A field of AI allowing computers to learn from visual inputs.
[111] Deep learning is a branch of machine learning that employs multi-layered neural networks known as deep neural networks to replicate the decision-making capabilities of the human brain. Most AI applications commonly used today rely on some form of deep learning.
[112] Chung, p. 263.
[113] Chung, p. 265.

Figures 7 and 8 show artefacts made collaboratively by D.O.U.G_2 and Chung, which the artist refers to as a ‘hybrid drawing’ in which they collaborate with 20 years of their own drawings remembered by the machine. The work implements human bias as an artistic style, that later transforms into a memory bank for the robotic arm to learn from.

Figure 7: Sougwen Chung drawing together with D.O.U.G_2

Figure 8: Sougwen Chung, Memory 1, Drawing Operations Unit: Generation 2, 24 x 19 in, 2017.

> Chung describes their work as an exploration of the relationship between the computable and 'uncomputable',[114] looking into the alternative communication methods of human and machine in the creative field. They state that the current narrative dismissing artificial intelligence in the face of the 'natural' leaves a missed opportunity for the exploration of AI's fallibility and the potential its bias carries for reinventing our relationship with the machine. For them, recognizing the imperfection of AI systems as a common ground between us and the machine would open a door toward a more cooperative future in the formation of these relationships, and a larger utilisation of artificial intelligence as a collaborator, rather than a tool, in the creation of art.[115]

Chung is just one of many examples of emerging generative artists innovating the space of creative artificial intelligence. By demystifying the technical specificalities behind their artwork, while simultaneously creating pieces unlike anything in traditional art, they facilitate the development of the above-mentioned new aura surrounding generative art. Reaffirming Kester's work – helping audiences understand the processes[116] behind the creation of such works allows for a newfound appreciation for these creators, who are at the same time artists and programmers and opens up space for the generative industry to be allowed into the realm of the arts.

Artists like Sougwen Chung demonstrate the growing significance of acknowledging that the future of art is in the collaborative potential of the human and the machine. Therefore, we must first address the influence of politics, economy, corporate monopoly and societal norms on the development of artificial intelligence algorithms to be able to shift our focus toward collaborative approaches. Transparency, accountability and inclusivity in algorithms are crucial to guaranteeing a fair creative environment for all. However, for this to take place there must occur a dissolution of the traditionalist hierarchies befalling this industry, including the ones in relationships between corporations and consumers, as well as algorithms and artists. In blurring the lines between artist and machine, Sougwen Chung invites the public to reconsider their preconceived notions of the Author figure, revealing a new aura of art and a novel concept of authorship not recognised by either Foucault or Barthes. Symbiosis of the artist and machine is the future of the creative industry,

[114] Chung, p. 260.
[115] Chung, p. 262.
[116] Kester, *The One and the Many*, p. 8.

and it is therefore imperative that we ensure a fair and inclusive creative landscape for future artists and their algorithmic co-creators.

Conclusion

The dynamics between artistic expression and technological advancement have long been the spark for conversations on authorship, democratisation, and creativity. As humanity navigates the landscape of generative artificial intelligence being ever more present in the arts it is important to reconsider our preconceived notions of these concepts. While exciting, the co-creation by human and machine in the arts raises profound questions on the ethics of autonomous creativity and how we approach algorithmic bias to ensure a transparent and egalitarian creative environment globally.

This dissertation has explored the nature of authorship through the theoretical approaches of Foucault and Barthes, drawing upon their decentralised views of the Author figure and the additional complexities technology, and more specifically artificial intelligence, brings in the age of digital media. Through an interdisciplinary approach, analysing literature, artwork and case studies, this research has aimed to shed light on the plethora of challenges that must be tackled before we envision the future of creative artificial intelligence. This includes the examination of gender-biased algorithms, necessitating the need for addressing broader concerns of social inequality and the need for increased transparency from large corporate systems regarding the creation of their generative algorithms. In order to ensure an inclusive creative environment, we must first tackle the social marginalisation embedded into our artistic tools and systems.

Additionally, the revaluation of authorship should include the recognition of both human and non-human authors, as well as cases in which the lines between the two are indistinguishable. Democratised creative artificial intelligence cannot be governed by large systems of power, as described by Foucault, but by the participatory methods of independent artists immersed in societal context. This non-hierarchal approach to artistic creation, introduced by Grant Kester and evidenced in the work of Sougwen Chung, will ensure transparency and accountability within this domain. The grey areas regarding the social impact of generative artificial intelligence are hindering its immersion into the industry and its acceptance by the wider public.

It is not unwise to state that generative artificial intelligence will gain even more momentum that is has now and that its presence in the art world is only going to increase in the future. Therefore, it is imperative that the issues of corporate monopoly, redefining authorship and ownership, algorithmic bias and democratisation are addressed before their negative consequences disrupt the creative potential held by this technology. Embracing the symbiosis of human and machine will

foster an egalitarian and inclusive creative environment, allowing for the aura of artificially generated art to arise. This relationship has the potential to revolutionise the artistic landscape, making it more democratic and opening doors for the boundless augmentation of artistic expression as we recognise it today.

By recognising the bond between human and non-human creativity, we set the stage for a paradigm shift in our definition of the arts, where inclusivity and innovation are championed and where the imaginative possibilities of artistic expression are rendered boundless by the imaginative capabilities of this symbiotic relationship.

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