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Analysis of AI-Generated Art under Copyright

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ABSTRACT

“The development of full artificial intelligence could spell the end of the human race. It would take off on its own, and re-design itself at an ever-increasing rate,” warned Stephan Hawking. What makes artificial intelligence superior to programs, is its ability to learn off of interactions and pre-existing data. This means that AI is capable of creating.

Copyright claims are often raised regarding the theft of art and understanding the difference between stolen work and inspired/derivative work is important. The incident of GANBreeder threw some light on the same where an AI created artworks not identical but extremely similar to that of other artists. It arose controversy as the original artists were enraged about the stolen artwork. Not all art created by AI had such striking similarities.

The intellectual property rights of the original creator can be at stake in cases of AI-generated artwork when one is unable to determine who the copyright belongs to. The AI does not have copyrights but if it has created artwork autonomously, how would its right, if any, be protected? And if the AI is given copyright, is there a violation of the rights of the developer or the user?

This paper will delve into the essentials to receive copyright and if AI-generated artwork would constitute under it. It will analyse the incident with GANBreeder where the AI-generated derivative/stolen works and explore the different approaches. This paper seeks to establish that AI can autonomously create artwork but cannot receive copyright despite fulfilling the essentials.

Keywords: *Artificial Intelligence, Intellectual Property Rights, Copyright, Art by AI, GANBreeder.*

I. INTRODUCTION

The Artificial Intelligence is taking the world by storm. The possibilities of uses via a smart machine, that is akin to human intelligence, are endless.

AI can be traced back to World War II, when a British Logician named Alan Turing, created

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a method known as the bombe which was a device used by the Allied powers to decipher German encryption ENIGMA. Also, known for the Turing test, which tests a machine's ability to think.² Two years after Turing's death, Prof. John McCarthy coined the term 'Artificial Intelligence.'³ He described AI as "the science and engineering of making intelligent machines, especially intelligent computer programs."⁴

The way that an AI works, is that it is given data and it learns patterns from the same without an explicit program, simulating human intelligence.⁵ To understand better, let's look at Cleverbot. It is an AI that has conversations with people. The responses the Cleverbot gives over time is learnt with the responses it receives and accordingly responds as more people have conversations with it.⁶

Art can be defined as a mode of expression and is not restricted to any form. The labour that is put in to make a distinct piece of work, that is their expression, is protected by copyrights. These rights are important as they prevent unauthorized use. With the development of technology, people found new modes of creation.

Scientists are using generative adversarial networks (GAN). It generates new work, based on the wide range of data it is taught. They changed the way that AIs produce art by having the generator create works that did not fall into a preexistent category of a painting, by maximizing deviation from established styles and minimizing deviation from art distribution.⁷

As AI develops, it has shown that it is capable of creating autonomously. This poses many questions of law as nothing has been legislated with the consideration that machines could one day be capable of this.

II. ART UNDER COPYRIGHT

To ascertain if AI-generated art comes under copyright, it is important to first ascertain what

² CIA, <https://www.cia.gov/news-information/featured-story-archive/2015-featured-story-archive/the-enigma-of-alan-turing.html> (last visited Nov. 10, 2020).

³ Noel Sharkey, *Alan Turing: The experiment that shaped artificial intelligence*, BBC (Jun. 20, 2012), <https://www.bbc.com/news/technology-18475646#:~:text=Turing's%20test%20replaces%20the%20man,questioner%20about%20its%20true%20identity.&text=The%20idea%20was%20that%20if%20the%20person%20asking%20the%20questions,thinking%20and%20have%20artificial%20intelligence.>

⁴ STANFORD, <http://jmc.stanford.edu/artificial-intelligence/what-is-ai/index.html#:~:text=What%20is%20artificial%20intelligence%3F&text=It%20is%20the%20science%20and,> Q (last visited Nov. 10, 2020).

⁵ J. Horst., *A Native Intelligence Metric for Artificial Systems*, THE NAT'L INST. STANDARDS & TECH. (August 1, 2002), https://tsapps.nist.gov/publication/get_pdf.cfm?pub_id=824478.

⁶ CLEVERBOT, <https://www.cleverbot.com/> (last visited Nov. 10, 2020).

⁷ Tom Ward, *AI Can Now Produce Better Art Than Humans. Here's How*, FUTURISM (Jul. 8, 2017), <https://futurism.com/ai-now-produce-better-art-humans-heres-how>.

comes under Copyright. It can be defined as the right that a creator has over their artistic and literary work, which could be books, paintings, films, music, sculptures etc. With technological advancements, the term now includes programs, databases etc. This protection is of the expression of ideas and not the idea itself. It is the economic interests and moral rights of the author over their work. The economic rights can be given to other parties for the reproduction, performance, recording, translation adaptation of the work.⁸ The Berne Convention, 1886 governs copyright protection.

As of now, copyright does not extend to art that is not created by humans. However, it is a grey area and precedents show that there is a shift from the view that art can only be created by humans and cannot be created by AI.

Originality of Work

Two doctrines are applied when checking whether one has copyrights or not. They are:

1. The Sweat of the Brow

This doctrine states that copyrights are the fruits of the effort by an author, hard work which is put into the creation of any work. The test was explained in the case of *University of London Press v. University Tutorial Press*⁹, where the Court stated that someone's expression need not be an original form but instead the requirement is that the work is not copied from anyone else's work, and must originate from the author.

The doctrine was followed in India, in the case of *Burlington Home Shopping v. Rajnish Chibber*¹⁰, where the Court held that a compilation would be protected under copyright. However, in *Indian Express Newspaper (Bombay) Pvt Ltd v Jagmohan*¹¹, the Court held that copyright cannot be given to new stories done by reporters as they are not original enough.

2. Modicum of Creativity

In the case of *Feist Publications v. Rural Telephone Service Company Inc.*,¹² The US Courts held that copyrights only protect the fruits of intellectual labour that are through the creative process of the mind. The US Supreme Court negated the 'Sweat of the Brow' doctrine and held that for a work to be original, the product should be an independent creation and must exhibit a "modicum of creativity". The Court emphasized 'creative originality'. "This

⁸ WIPO, <https://www.wipo.int/copyright/en/> (last visited Nov. 15, 2020).

⁹ *University of London Press v. University Tutorial Press*, [1916] 2 Ch 601.

¹⁰ *Burlington Home Shopping v. Rajnish Chibber*, 1995 PTC (15) 278.

¹¹ *Indian Express Newspaper (Bombay) Pvt Ltd v. Jagmohan*, AIR 1985 Bom 229; *RG Anand v. Delux Films and Others*, AIR 1978 SC 1614.

¹² *Feist Publications v. Rural Telephone Service Company Inc.*, 499 U.S. 340 (1991).

doctrine, therefore, stipulates that originality subsists in a work where the person has applied one's creativity and mind into its creation. The standard or level of creativity does not necessarily need to be high but some amount of creativity must be there for it to be protected under Copyrights.”¹³

In India, in the case of *Eastern Book Company v. D.B. Modak*¹⁴, the Court negated the ‘sweat of the brow’ doctrine and followed ‘modicum of creativity’ instead. The Court held that when it comes to derivative work, there must be some level of creativity showing the individual’s skill and labour instead of merely being a copy of the original work.¹⁵ The judgement also defined primary work as literary work not based on the existing subject matter and defined secondary or derivative work as work based on the existing subject matter. The notion of ‘flavour of a minimum requirement of creativity’ was introduced in this case. It was held that in order to claim or establish copyright, the creativity applied need not be novel but must show some amount of creativity so as to be protected under copyright. Regarding the facts of the case, the Court held that inputs made by the editors of SCC come under copyright because the work requires the use of legal knowledge, skill and judgement, of the editors.

III. COPYRIGHT OF WORK CREATED BY MACHINES

In order for AI generated Art to come under copyright, the following must be established: creativity, autonomy, unpredictability, learning capability and freedom of choice.

In Australia, the Court stated in the case of *Acohs Pty Ltd v Ucorp Pty Ltd*.¹⁶ stated that inventions of a computer cannot be protected under copyright as it is not produced by a human. However, in some countries, such as the UK, the laws protect the author that has made necessary arrangements for the creation of art or to the developers.¹⁷

The monkey selfie case is well-known as the image of the macaque monkey who appears to be smiling went viral on the internet. It was taken by British photographer David Slater at a national park in North Sulawesi, Indonesia in 2011. He recalled the monkey having taken a liking to the reflection of the lens. The picture went on to be uploaded to Wikipedia where it was listed as public domain instead of under the copyright of Mr. Slater. He attempted to

¹³ Suchi Mehta, *Analysis of Doctrines: ‘Sweat of the Brow’ and ‘Modicum of Creativity’ vis-a-vis originality in Copyright Law*, INDIA LAW (Jan. 9, 2015), <https://www.indialaw.in/blog/blog/law/analysis-of-doctrines-sweat-of-brow-modicum-of-creativity-originality-in-copyright/>.

¹⁴ *Eastern Book Company v. D.B. Modak*, (2008) 1 SCC 1.

¹⁵ LAW TIMES JOURNAL, <http://lawtimesjournal.in/eastern-book-company-and-ors-vs-d-b-modak-and-ors/> (last visited Nov 10, 2020).

¹⁶ *Acohs Pty Ltd v. Ucorp Pty Ltd*, [2010] FCA 577.

¹⁷ Andres Guadamuz, *Artificial intelligence and copyright*, WIPO (Oct. 2017), https://www.wipo.int/wipo_magazine/en/2017/05/article_0003.html#:~:text=Artificial%20intelligence%20is%20already%20being,used%20and%20reused%20by%20anyone.

have the image taken down however was rejected as he was told that monkeys cannot own the copyright. In 2015, The People for the Ethical Treatment of Animals (PETA) ended up suing Mr. Slater on behalf of the monkey, named Naruto. The group claimed that Mr. Slater did not own the copyright and any proceeds from the photo should be used to protect macaque monkeys in the animal preserve in Indonesia.¹⁸ PETA claimed that the selfie was taken voluntarily without assistance from Mr. Slater and that the selfie thereby belongs to Naruto, the monkey. In *Naruto v. Slater*¹⁹, the Trial Court initially dismissed the suit on the ground that animals do not have any standing in court and cannot sue for copyright infringement even if the photo was taken as an independent and autonomous action. PETA appealed in the Court of Appeals of the 9th Circuit, but later the parties ended up settling out of court.²⁰

The United States Supreme Court in the case of *Burrow-Giles Lithographic Co. v. Sarony*²¹ stated that photography was a mechanical process in most ordinary pictures. However, the respective picture of Wilde included various things such as the creation of a specific setting for the photograph with the lighting and other arrangements. He had great control and involvement in the process of taking the photo. The Court ruled that the photographer holds the copyrights.²²

Can AI be Creative?

There can be two approaches to this, one where the external output is considered and one where the internal process of creation is considered. The Turing test can be put on the first approach, where people can distinguish between the artwork created by a human and one created by a machine and the machine would pass if people are unable to make the distinction.²³

Boden states that for a program to pass the Turing test, the artwork produced must be: “

- a) Indistinguishable from artwork produced by a human
- b) Seen as having aesthetic value similar to that produced by a human.”²⁴

¹⁸ Regina De Con Cossio, *Who owns Artificial Intelligence- Created Art? The Copyright*, SYBARIS (Nov. 15, 2017), <https://www.sybariscollection.com/owns-artificial-intelligence-created-art-copyright/>.

¹⁹ *Naruto v. Slater*, 888 F.3d 418 (9th Cir. 2018).

²⁰ Andres Guadamuz, *Can the monkey selfie case teach us anything about copyright law?*, WIPO (Feb. 18, 2018), https://www.wipo.int/wipo_magazine/en/2018/01/article_0007.html.

²¹ *Burrow-Giles Lithographic Co. v. Sarony*, 111 U.S. 53, 4 S. Ct. 279 (1884).

²² LEXISNEXIS, <https://www.lexisnexis.com/community/casebrief/p/casebrief-burrow-giles-lithographic-co-v-sarony> (last visited Nov. 10, 2020).

²³ COECKELBERGH, *CAN MACHINES CREATE ART?* 285-303, *Philos. Technol* (2017).

²⁴ BODEN, *THE TURING TEST AND ARTISTIC CREATIVITY* 409-413, *Kybernetes* (2010).

One must also ask if the AI is imitating art or creating something new. As seen in certain instances, where the AI replicated artwork that was part of the data input instead of creating. This would vary on an individual basis, whether or not the AI has been developed well enough.

With the Burrow Case, it can be said that AI-generated art could also be protected as long as the individual can show that creativity and involvement of the author in its creation. The question arises if AI can generate “creative” art. While many hold the opinion that the works cannot be considered as art, the contrary has become more and more evident.

The Day A Computer Writes A Novel is an example of the same. The computer is the protagonist of the story. It was not completely created by an AI but the project intended to test the ability of the AI to be creative.²⁵ The book ended up passing the first round of screening for the Hoshi Shinichi Literary Award. It was not revealed that the novel was written with the help of an AI and was still passed the screening, which shows that AI is capable of being creative.²⁶

IV. GANBREEDER ISSUE

GANBreeder, now renamed Artbreeder, is a tool that uses GANs to create artwork, created by Joel Simon. The tool works by users selecting images and setting parameters of their choice to create new images.²⁷ For example, a user may combine two pre-existing pictures of a dog and a flower, it would generate pictures combining them.

However, it failed in creating new distinct images and users started to notice the similarities in the artwork generated. Some users were accused of stealing artwork as well. Users started to notice that the artwork generated had already been generated or resembled pre-existing pictures.

Considering how GANBreeder works, the possibility of multiple users creating similar images was highly probable and there could be no claim of protection on such kind of generated artwork. Originality can be made through further changes but there still lies an implied license on the users, who are using other people’s work as a basis of their own. The question would then come to whether it would count as derivative work or not. This gave rise to further questions regarding copyrights, fair use, ownership of works etc., which is yet to be

²⁵MEDIUM, <https://medium.com/the-research-nest/interesting-novels-written-by-artificial-intelligence-d407e330fe07> (last visited Nov. 10, 2020).

²⁶ *Artificial intelligence and copyright: ownership issues in the digital age*, CORRS CHAMBERS WESTGARTH (Sept. 21, 2020), <https://corrs.com.au/insights/artificial-intelligence-and-copyright-ownership-issues-in-the-digital-age>.

²⁷ ARTBREEDER, <https://www.artbreeder.com/> (last visited Nov. 11, 2020).

resolved as no firm stance exists on AI-generated artwork.²⁸

V. APPROACHES ON ASCERTAINING OWNER OF COPYRIGHT

1. The Developer

It can be argued that the developer has given the most contribution as he has written the code/program and any result of the same can be considered to be under his IP. The time and effort put into the program are important. He is a vital part of the process without which the final product would not exist.²⁹ Giving the developer royalties of the proceeds from his AI would help him continue. If he does not receive an incentive for his work, he would not be able to sustain himself or the costs of running the AI. Companies invest millions into the machine and cannot run their activities without profits. This can be solved by selling subscriptions of usage of the machines, to cover the costs of production and future running of the same.

It was seen in the case of *Nova Productions Ltd. v. Mazooma Games Ltd.*³⁰, the Court of appeal held that a gamer's input is not artistic and that the gamer has made no contribution or skill/labour of an artistic kind.³¹

However, with programs becoming more and more diverse and widespread use of the same, this may not be a feasible option. The sole payment for the purchase of the use of the program would be enough remuneration for the developer's work. The outputs of the program would not come under the copyright of the author. Furthermore, the developer would merely be giving a tool to the user, who uses it at his own will and conditions to create the output.

2. Machine/ AI itself

The approach of giving copyright to the machine itself is the least feasible option. As of now, machines do not have a legal identity to have rights and therefore cannot have a claim. AI's are not as developed, to have enough a distinct personality or to act without any human interference. This can only be considered in the future when the characteristic of 'self-awareness' develops and the machine acts autonomously. The rights cannot be given as of

²⁸ Jason Bailey, *Why is AI Art Copyright So Complicated?*, ARTNOME (Mar. 27, 2019), <https://www.artnome.com/news/2019/3/27/why-is-ai-art-copyright-so-complicated>.

²⁹ Robert Yu, *The Machine Author: What Level of Copyright Protection Is Appropriate for Fully Independent Computer-Generated Works?*, 165 U. Pa. L. Rev. 1245 (2017), https://scholarship.law.upenn.edu/cgi/viewcontent.cgi?article=9582&context=penn_law_review.

³⁰ *Nova Productions Ltd. v. Mazooma Games Ltd.*, [2007] EWCA Civ 219.

³¹ Andres, *supra* note 16.

now, as it would deprive the developers and creators of their rights.³²

Some instances of AI being creative with full autonomy has been seen, but there is still a long way to go. Many incidents being seen where the artwork created is not distinct enough from pre-existing work, raising questions of authenticity and questions of law on copyright claim in such scenarios.

The nature of AI is such that the developer may not have intended certain outputs. This was seen when Facebook shut down their AI Research Lab (FAIR) when they realized that the AI created a language of its own to communicate with other AIs.³³

SACEM, France and Luxembourg authors' rights society has recognized Aiva, a music composing AI, as a composer. This means that Aiva can release music under its name as well as receive royalties from its music.³⁴ While economic rights would not be an issue, moral rights would be conflicting. However, those rights can be given to the developers of the AI.³⁵

3. User as the Author

If one goes with the approach towards GANBreeder, where the user has made the most important contribution, such as the selection of data and parameters which create the result, giving the user copyright makes the most sense, along with the consideration that users have paid to use certain software of the developer. Without the user making these decisions, the program is impractical as well. One must consider whether the data used is owned by the user or is in the public domain.

Furthermore, if we consider the *Burrow- Giles*³⁶ case, where the photographer was involved and controlled the entire process of the photograph, making the camera, solely a tool, with the rest being his vision. The photographer won the claim of copyright as his creative process is visible.

The doctrine Made for Hire can also be applied, where it can be said that the AI was on hire and therefore any outputs from the same would be under the ownership of the one who hired.

³² Yashik Sahni, *Should The Works Created By Artificial Intelligence Machine Be Protected Under The Copyright Law?*, KHURANA & KHURANA (Feb. 5, 2020), https://www.khuranaandkhurana.com/2020/02/05/should-the-works-created-by-artificial-intelligence-machine-be-protected-under-the-copyright-law/#_ftn10.

³³ Tony Bradley, *Facebook AI Creates Its Own Language In Creepy Preview Of Our Potential Future*, FORBES (Jul. 31, 2017, 11:20 AM), <https://www.forbes.com/sites/tonybradley/2017/07/31/facebook-ai-creates-its-own-language-in-creepy-preview-of-our-potential-future/#7f4a013292c0>.

³⁴ Ed Lauder, *Aiva is the first AI to Officially be Recognised as a Composer*, AI BUSINESS (Mar. 10, 2017), https://aibusiness.com/document.asp?doc_id=760181.

³⁵ *Supra* note 25.

³⁶ *Supra* note 20.

This is a possible alternative to avoid works falling into the public domain.³⁷

Like cameras, programs and AI have widespread use in this digital age, and the claim of giving copyrights to the machine or the developer does not stand as it is a tool, and the developer has solely provided the tool, while the rest is up to the user. Millions of people deriving outputs with the use of a tool does not give anyone but the user rights to the output. However, not every AI is the same, and may not have the same amount of human contribution. This approach does not stand when there is no human involvement in the process of creation and the AI is solely responsible.

4. Joint-Ownership

This approach could give all parties involved the due credit on any work. It seems like the perfect solution to all the issues raised in other approaches. However, it is not and poses more issues and complexity to the distribution of rights. Multiple parties, with varying levels of contribution, exist and the assertion of the amount of credit to each party would not only be a difficult task but would raise questions due to the subjective nature. There is no test or quantifying system to determine the same.³⁸

Furthermore, if the user has already paid to avail of the services offered by the program or machine, the provision of joint-ownership, would lead to double profits to the other parties. With the mass use of many systems, it would be difficult to deal with the legal claims of every single party.

For example, the user purchases the rights to user software “A” for one year. The user also purchases rights to editing software and additional rights to use someone's music. The user is also using a computer system to run all these software that he has already purchased. Giving every single party involved is not feasible and the user would suffer losses after purchasing rights to use a system and then further giving a pay cut for any output-driven with the mix of software and work from multiple parties.

5. Public Domain

By way of the current system of laws in place, any output via AI would automatically result in being in the public domain. The developer gets his due and the machine is cited as the owner of the artwork. However, the user does not get credit. The user does have the resort of addition on the artwork made to make it his own and then get the copyrights of the same.

³⁷ Kalin Hristov, *Artificial Intelligence and the Copyright Dilemma*, Vol 57- No. 3 IDEA 431, 2017, https://ipmall.law.unh.edu/sites/default/files/hosted_resources/IDEA/hristov_formatted.pdf.

³⁸ Robert, *supra* note 28.

It is also very difficult to ascertain the creator of the artwork. Users may be able to find certain pre-existing work and make certain changes to then claim as their own. Also considering the wide range of input, data may contain copyrighted works. However, this may discourage users from displaying their work as they may go into the public domain, which would lead to other people possibly using the output without the user receiving royalties for the same.³⁹

Another option is for the user to state the mode in which he has used the AI as a tool to create his work. Once his exact parameters are made public and someone else creates artwork with the exact parameters, the first user may have a claim against him. Otherwise, there are chances of multiple users using the same process and parameters simply by coincidence and neither one of the users would be able to have any claim over their work.

VI. FACTORS THAT CAN BE CONSIDERED IN INDIVIDUAL CASES

(i) The level of interference of humans in the process of creation-

To establish a claim of copyright, the user must be able to establish that the AI has been merely used as a tool to reach the output. Like *Burrow-Giles*, if the user can show that he had certain control which resulted in the output being distinct, then a claim should stand.

(ii) The autonomy of the AI-

This goes along with the previous point. In some AIs, there is minimal to no interference by users or the programmers, in the process of creation. Two options are available, the creation may either go to the public domain or the developer of the AI gets the copyright. Since as of now, the lack of legal personality of the AI would not entitle it to copyrights.

(iii) Any other software used by the AI or users for the final output-

The possibility of multiple software used in the creation of a work cannot be ruled out. For example, a user generates art on GANBreeder and then uses photoshop to further edit the work into something distinct. It would be unfair to deny the user of copyright, as the AI was merely one of the tools used and the output was not entirely based on the result of the AI.

VII. CONCLUSION

There are many aspects and probabilities to consider before legislating on this as countries would primarily intend to secure the rights of citizens over animals and machines. Questions

³⁹ Ayush Pokhriyal & Vasu Gupta, *Artificial Intelligence Generated works under Copyright Law*, NLUJ Law Review 6(2) 93 (2020), <http://www.nlujlawreview.in/wp-content/uploads/2020/04/62-NLUJ-Law-Review-93-2020.pdf>.

such as the protection of the developers or the AI or the user vary on an individual basis and there is no uniformity. The most convenient option would be to leave art generated by AI in the public domain.

Regardless, the basic principle that is followed is that Copyright exists to protect the expression of ideas. The term “distinct” is subjective. The three essentials of Copyright must stand i.e. fixation, originality and expression. The output should be able to prove that it is distinct and some creative process has gone into it. This is meant to motivate creative activity⁴⁰ by giving them rights and incentives gained with those rights. Denial of copyright to AI-generated artworks would discourage developers. This would not be favourable or feasible considering the increasing need for technology in people's lives.

To conclude, art can be considered as anything which evokes emotions in the audience and is an expression of the creator. It is not restricted to any mode but is supposed to be the most versatile. Art is not solely for the creator but the audience as well and it must be protected in all circumstances.

⁴⁰ Sony Corp. of Am. v. Universal City Studios, Inc., 464 U.S. 417, 429 (1984).