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Issues of Authorship and Ownership in Work created by Artificial Intelligence - Indian Copyright Law Perspective

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ABSTRACT

The fact that Artificial Intelligence (AI) is creating literary, artistic, and musical work raises important questions concerning copyrightability and authorship and ownership of such work under Copyright Law. A question that arises is whether AI can be considered the author and owner of work? Further, as per the Copyright Act, 1957, the "*author means... in relation to... work which is computer-generated, the person who causes the work to be created*". Thus, who should be considered to have caused work to be created when work is created by AI? Alternatively, can it be said that no person has caused the work to be created? This paper answers these questions from the perspective of Indian Copyright Law and copyright law justifications, while briefly looking at the position in other jurisdictions such as the US and UK. It also provides possible solutions to the issue of authorship and ownership in work created by AI which include - the work entering into the public domain, compulsory licenses being sought to make use of the work, recognition of limited personhood for AI, joint authorship for the persons involved or recognizing a sui generis right in work created by AI.

Keywords: Artificial Intelligence, Copyright Law, Ownership, Computer-generated work, Copyright Act, 1957

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I. Introduction

Until now, Copyright Law has looked at technology merely as a tool in the hands of humans to create work.[1] It is the human and not the technology which is considered the author of such work. For example, when a photographer clicks a photograph using a camera, it is the photographer and not the camera that is considered the author of the work.[2] But unlike technology such as a camera, AI operates autonomously. The autonomous functioning of AI challenges the basic assumption that technology is merely a tool in the hands of humans.

AI, by operating independently of human creative input, is creating work that, if created by humans alone, would qualify for copyright. This is because the work created by AI is largely indistinguishable from work created by humans. There are plenty of examples of such work created by AI which include literary works such as novels and news articles, artistic works such as paintings and portraits, and musical works, among others.[3] These examples of human-like work created by AI raise important questions under Copyright Law. Can the work created by AI be considered original? Can AI be considered the author of the work? Under Copyright Law, usually, the author of a work is also considered the first owner of a work.[4] In case the AI is considered the author of the work, can AI be considered the owner of the work? Alternatively, if AI is not considered the author or owner of work, who should be the author and owner of the work? Should it be the user, programmer, or data supplier of the AI? This paper contributes to the existing debate by making a detailed analysis of the issue from the perspective of different kinds of AI. The paper makes suggestions for possible solutions under the Indian Copyright Law, while critically analysing Section 2(d)(vi) of the Copyright Act, 1957. It also analyses the question of copyright ownership of the programmer and user of the AI from the point of view of Copyright Law justifications.

II. Artificial intelligence

AI are machines that perform tasks requiring intelligence.[5] Intelligence is defined in various ways[6], one of which is human intelligence. Thus, machines can be considered artificially intelligent if they perform tasks that humans perform using intelligence such as perception, conversation, and decision making.[7] AI is categorised as weak if it simply performs programmed functions through simulation, and AI is categorised as strong if it goes beyond these functions by thinking autonomously.[8] AI is categorised as Artificial Narrow Intelligence when it cannot perform varied tasks and is intelligent in a narrow domain.[9] Artificial General Intelligence, in contrast to Artificial Narrow Intelligence, can perform varied tasks across domains but it is hypothetical.[10] Super Intelligent AI, which is also hypothetical, would surpass human intelligence across domains.[11] Today AI is being used in

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1 Avishek Chakraborty, *Authorship of AI Generated Works under the Copyright Act, 1957: An Analytical Study*, 8 NIRMA U. L.J. 37 (2019).

2 Copyright Act, 1957, s 2(d)(iv).

3 Bernard Marr, *Can Machines And Artificial Intelligence Be Creative?* (Oct 30, 2021), https://www.forbes.com/sites/bernardmarr/2020/02/28/can-machines-and-artificial-intelligence-be creative/?sh=7afccf0e4580

4 Copyright Act, 1957, s 17.

5 Paul Scharre, et al., *What is Artificial Intelligence? In ARTIFICIAL INTELLIGENCE: What Every Policymaker Needs to Know*, Center for a New American Security (2018).

6 Shane Legg & Marcus Hutter, *A Collection of Definitions of Intelligence* (2021), (Oct 30, 2021), https://arxiv.org/abs/0706.3639

7 Defense Science Board, *Report of the Defense Science Board Summer Study on Autonomy*, (Oct 30, 2021), https://www.hsdl.org/?view&did=794641

8 Rex Martinez, *Artificial Intelligence: Distinguishing between Types & Definitions*, 19 NEV. L.J. 1015 (2019).

9 Paul Scharre et al., supra note 5.

10 Ibid.

11 Stephan De Spiegeleire, Matthijs Maas and Tim Sweijs, *ARTIFICIAL INTELLIGENCE AND THE FUTURE OF DEFENSE: STRATEGIC IMPLICATIONS FOR SMALL- AND MEDIUM-SIZED FORCE PROVIDERS*, Hague Centre for Strategic Studies (2017).

applications across sectors. AI is creating literary, artistic, and musical work.[12] AI is being used to create journalistic content. AI is writing novels and poems. AI is being used to create music. AI is also creating portraits and paintings.

III. AI distinguished from technology like camera

Is AI different from other technological tools such as a camera? In the case of a photograph clicked using a camera, there is a creative contribution by the human behind the camera in making choices concerning the angle, setting, and lighting of the photograph. The photograph clicked by the photographer is considered copyrightable and the photographer is considered the author of the photograph.[13] In the case of Artificial Intelligence, there is little or no creative input from a human. At most, the human chooses the data with which to feed the AI. The AI autonomously processes the data to generate an output. Further, although the AI is programmed by the programmer, the working of AI is largely unknown and there is a lack of predictability concerning the exact output of the AI. Thus, it cannot be said that human is producing the output of AI like the human can be considered to click a photograph using a camera. The human is merely programming and supplying data to the AI, and unlike in the case of a photograph clicked by a camera, there is no direct role of creative human input in the output of AI.

IV. Copyright-ability of work created by AI

One of the conditions of copyrightability is originality[14]. Thus, work made by AI can be tested for originality to determine if the work is copyrightable. Section 13 of the Indian Copyright Act says that copyright shall subsist in "original" dramatic, musical, literary, and artistic works. But the Indian Copyright Act does not define originality. To understand originality, one can look at the divergent doctrines of originality in different jurisdictions such as the UK, US and Canada. The requirements in these jurisdictions include "sweat of the brow", "creativity", "modicum of creativity" and "independently created". While the "sweat of the brow" standard is considered a low standard, "modicum of creativity" is considered a high standard.[15] The Indian standard of originality is balanced[16]. The Indian standard is neither "sweat of the brow" nor "creativity". A work is original as per Indian law if there is "skill and judgement" and "minimum degree of creativity".[17] The requirement is not that of creativity as novelty or non-obviousness.[18] The requirement is also not satisfied by supplying mere capital or labour.[19] The requirement is that of exercise of skill and judgment. [20] The following sub-section analyses whether work created by AI fulfils the test of originality.

A. Originality of work created by AI

1. *Copying from other work*

One of the basic conditions for a work to be original is that it is "not copied from other work".[21] Can it be said that AI creates its output without copying? In this respect, the popular saying is that

[12] Bernard Marr, supra note 3.
[13] Copyright Act, 1957, s 2(d)(iv), Burrow-Giles Lithographic Co. v. Sarony 111 U.S. 53 (1884).
[14] Copyright Act, 1957, s 13(a).
[15] Eastern Book Company vs D. B. Modak (2008) 1 SCC 1.
[16] Ibid.
[17] Ibid.
[18] Ibid.
[19] Ibid.
[20] Ibid.
[21] Rupendra Kashyap v Jiwan Publishing House 1996 PTC 439 Del.

"there is nothing new under the sun".[22] Everything is created based on something. Humans rely on past work to create new work.[23] It cannot thereby be said that work created by humans is copied as per Copyright Law. There is a need to distinguish between mere copying and relying on past work to create work. In the case of work generated by AI, although the AI relies on other work, it cannot be said that the AI copies the work. Just like a human cannot create work in complete isolation without drawing on work previously done, the AI also needs to rely on work to generate output. AI relies on the data input into it, which it processes through complex algorithms, to create work. Hence, work created by AI is original to the extent that it is not copied from other work.

2. *Minimum Degree of Creativity*

Can it be said that the work created by AI fulfils the condition of "minimum degree of creativity"? It has been argued in an article that creativity in a work can be assessed in two ways – by looking at the final output alone or by looking at the process of creation.[24] By looking at the final output, it can be objectively assessed if the work has a "minimum degree of creativity". By looking at the process of creation, it has to be assessed subjectively if the work was created with a "minimum degree of creativity". Looking at creativity objectively, work made by AI would qualify the condition of "minimum degree of creativity" as the threshold of creativity is quite low[25] and work created by AI, being indistinguishable from work made by humans, would fulfil this criterion. Looking at creativity subjectively, it has to be assessed whether creativity is involved in the creation of the work. In this regard, a comparison can be made between human creativity and the way AI operates.[26] It is believed that humans are creative. Can the same be said for AI?

The father of AI, the late Marvin Minsky had said that human is nothing but a meat machine.[27] This is a way of looking at human thinking as computational.[28] If it can be said that human thinking is computational, it would be comparable to the processing of AI which is also computational. The work created by AI should then fulfil the subjective criteria of creativity. On the other hand, if creativity is thought of as uniquely human, AI would not fulfil the subjective criteria of creativity.[29] However, if it is considered that AI is creative, it can be said that the criteria of creativity would be fulfilled. In this regard, a distinction should be made between Machine Learning and other AI which work on algorithms based on pre-generated templates.[30] The latter may not be creative but Machine Learning which learns to make its own decisions could be considered creative. Judging creativity from objective criteria, work created by AI would be original. Judging creativity from subjective criteria, the assessment would vary depending on the kind of AI and the perspective taken towards the question of whether AI is creative.

B. *Originality in other jurisdictions*

Originality has been interpreted in different jurisdictions. A work is original as per US law if the

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[22] What has been will be again, what has been done will be done again; there is nothing new under the sun. 'Ecclesiastes 1:9

[23] Daniel J. Gifford, *Innovation and Creativity in the Fine Arts: The Relevance and Irrelevance of Copyright,* 18 CARDOZO Arts & ENT. L.J. 569 (2000).

[24] Edward Lee, *Digital Originality*, 14 VAND. J. ENT. & TECH. L. 919 (2012).

[25] Eva E. Subotnik, *Originality Proxies: Toward a Theory of Copyright and Creativity,* 76 BROOK. L. REV. 1487 (2011).

[26] Anna Shtefan, *Creativity and artificial intelligence: a view from the perspective of copyright,* 16 Journal of Intellectual Property Law & Practice 7 (2021).

[27] Condé Nast, *Marvin Minsky's Marvelous Meat Machine* (2021). (Oct 30, 2021). https://www.wired.com/2016/01/marvin-minskys-marvelous-meat-machine/

[28] Annemarie Bridy, *Coding Creativity: Copyright and the Artificially Intelligent Author,* 2012 Stan. TECH. L. REV. 5 (2012).

[29] Anna Shtefan, supra note 26.

[30] Russ Pearlman, *Recognizing Artificial Intelligence (AI) as Authors and Investors under U.S. Intellectual Property Law,* 24 RICH. J.L. & TECH. i (2018).

work is "independently created" and has a "minimum degree of creativity".[31] A work is original as per UK law if it involves "authorial intellectual creation" or "skill, labour and judgement."[32] The analysis made in the previous sub-sections of whether work created by AI is copied from other work and whether work created by AI can be said to have a "minimum degree of creativity", would equally apply to these jurisdictions.

V. AI as the author of work

A. *Inadequacy of Section 2(d)(vi)*

As per Section 2(d)(vi) of the Copyright Act, 1957, the "*author means.. in relation to any literary, dramatic, musical or artistic work which is computer-generated, the person who causes the work to be created*".[33] A similar provision is contained in the Copyright, Designs and Patents Act (CDPA), UK which states that "*In the case of a literary, dramatic, musical or artistic work which is computer-generated, the author shall be taken to be the person by whom the arrangements necessary for the creation of the work are undertaken.*"[34] Further, computer-generated work is defined in the CDPA as being "*generated by computer in circumstances such that there is no human author of the work.*"[35] Work created by AI squarely falls under the definition of "computer-generated work" under CDPA as there is "no human author of the work" when work is created by AI. Unlike the CDPA, UK which defines "computer-generated work", the Indian Copyright Act, 1957 does not define this term. Further, the phrase "*person by whom the arrangements necessary for the creation of the work are undertaken"* in CDPA, UK should be contrasted with the phrase, *"person who causes the work to be created"* in Section 2(d)(vi) of Indian Copyright Act. While CDPA addresses the issue of authorship in work created by AI, Section 2(d)(vi) of the Copyright Act, 1957 is inadequate to deal with the issue for two reasons.

Firstly, no person can be said to have caused the work to be created as per Section 2(d)(vi) as AI works autonomously. It is the AI that creates the work and not the human. Moreover, unlike the requirement under UK law of "*making arrangements necessary for creating the work*", the requirement of "*causing the creation of the work*" in India presents a higher threshold. The person supplying the data or programmer or user cannot be said to be "*causing the creation of the work*" by merely supplying the programming and data to the AI. Secondly, there may be cases where there would be no human who would have caused the creation of the work where the AI creates its own AI which creates work. In a situation where an AI creates another AI which then creates work, no person can be said to have "*caused the work to be created*" or "*undertook the arrangements necessary for creation of the work*".[36] An example of an AI creating its own AI is the AI AutoML, which was developed by Google Brain.[37]

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[31] Feist Publications, Inc. v. Rural Tel. Serv. Co. 499 U.S. 340, 345 (1991).

[32] Goold P, *The Curious Case of Computer-Generated Works under the Copyright, Designs and Patents Act 1988*, City Law School Research Paper 2021/03 (2021).

[33] Copyright Act, 1957, s 2(d)(vi).

[34] Copyright, Designs and Patents Act, UK, s 9(3).

[35] Copyright, Designs and Patents Act, UK, s 178.

[36] Alston Asquith, *Artificial Intelligence and Copyright Law: Who (or What) Owns What?* (last visited Oct 30, 2021), https://www.alstonasquith.com/artificial-intelligence-copyright-law/

[37] Dom Galeon & Kristin Houser, *Google's AI Built Its Own AI That Outperforms Any Made by Humans* (last visited Oct 30, 2021), https://www.sciencealert.com/google-s-ai-built-it-s-own-ai-that-outperforms-any-made-by-humans#:~:text=In%20May%202017%2C%20researchers%20at,of%20generating%20its%20own%20AIs.

B. *AI as Author under Section 2(d)(i)*

Reliance can be placed on Section 2(d)(i) of the Copyright Act, 1957, which says that the "*author means in relation to literary or dramatic work, the author of the work.*"[38] As "author" is defined as the author, the term "author" cannot be said to be limited in application to humans alone and AI may be covered under this definition.

C. *AI as Author in other jurisdictions*

In the UK, the term "author" is understood as the "*person who creates the work*".[39] Similarly, in the US, the case of *Community for Creative Non-Violence v. Reid* defines "author" as someone "*who actually creates the work".*[40] AI can qualify as an "author" as per this understanding of the term "author" as AI is the entity that autonomously creates the work. But AI cannot be an "author"[41] under US law because the US has a "*human authorship requirement*" and does not protect "*works produced by a machine or mere mechanical process that operates randomly or automatically without any creative input or intervention from a human author*."[42] Further, the US cases of *Burrow-Giles Lithographic Co. v. Sarony*[43] and *Trade-Mark Cases*[44] define "author" using terms that indicate that only humans can be the "author". Moreover, there is the famous *Monkey Selfie Case*[45] in the US which dealt with the question of whether a Monkey could be considered the "author" of a photograph. The Court rejected the copyright claim of the monkey because of a lack of legal standing of the monkey.[46] AI cannot be considered an "author" in the US because of a lack of legal standing. Along with the explicit "human authorship requirement" and questions over the legal standing of AI, questions concerning the adequacy of enforcement of copyright[47] and remedies provided by copyright law also unsettle the proposition of the AI being considered the author.[48] Another question that unsettles the position of AI as the author is a lack of legal personhood.[49] In the US, the "human authorship" requirement would have to be done away with to recognise AI authorship.[50] But unlike in the US[51], there is no explicit requirement of human authorship under Indian law.

VI. *Entities other than AI as the author and owner of work*

If the AI is not considered the author and owner of work, who then should be considered the author and owner of such work? As per Section 2(d)(vi) of the Copyright Act, 1957, the "*author means ... in relation to any literary, dramatic, musical or artistic work which is computer-generated, the person who causes the work to be created*". As per this definition, the person who causes the creation of work would be the author.

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38 Copyright Act, 1957, s 2(d)(i).
39 Copyright, Designs and Patents Act, UK, s 9(1).
40 Community for Creative Non-Violence v. Reid 490 U.S. 730 (1989).
41 Patrick Zurth, *Artificial Creativity? A Case against Copyright Protection for AI-Generated Works,* 25 UCLA J.L. & TECH. i (2020).
42 Third Edition of the Compendium of U.S. Copyright Office Practices, 2017.
43 Burrow-Giles Lithographic Co. v. Sarony 111 U.S. 53, 58 (1884).
44 Trade-Mark Cases 100 U.S. 82, 94 (1879).
45 Naruto, et al v. David John Slater Case No 3:15-cv-04324-WHO.
46 Russ Pearlman, supra note 30.
47 Niloufer Selvadurai & Rita Matulionyte, *Reconsidering creativity: copyright protection for works generated using artificial intelligence*, 15 Journal of Intellectual Property Law & Practice 7 (2020).
48 Victor M. Palace, *What If Artificial Intelligence Wrote This: Artificial Intelligence and Copyright Law,* 71 FLA. L. REV. 217 (2019).
49 Zack Naqvi, *Artificial Intelligence, Copyright, and Copyright Infringement,* 24 MARQ. INTELL. PROP. L. REV. 15 (2020).
50 Wenqing Zhao, *AI Art, Machine Authorship, and Copyright Laws,* 12 AM. U. INTELL. PROP. BRIEF 1 (2020).
51 Third Edition of the Compendium of U.S. Copyright Office Practices, 2017.

As discussed above, AI works autonomously and without any human creative input. Humans provide only programming and data to the AI which then autonomously produces output. In this limited sense, no person can be said to cause the creation of the work as the AI is the entity that is creating the work. Hence, no human can be said to be the author of the work. On the other hand, it can be argued that there is a creative input by the programmer in programming the AI, without which AI would not be able to create work. Similarly, it can be argued in favour of the human behind the AI that AI is merely a tool in the hands of the human, although a highly sophisticated one.

A. *Programmer as author*

The role of the programmer in laying the rules for the working of AI and in supervising the working of AI favours the programmer being considered the person who causes the creation of the work under Section 2(d)(vi). The programmer of the AI makes a contribution to the working of the AI and creation of work by coding the AI, training it on data, and reconfiguring and recoding the AI based on the output of the training data so that the AI functions optimally. The argument against the programmer being considered the author is that the output of AI is often unpredictable and not under the control of the programmer, and hence the programmer may not be the person who could be said to have "caused the work to be created"[52] under Section 2(d)(vi).

B. *User as author*

From the point of view of causing the creation of work, the user could be considered to have caused the work to be created only in the limited sense that the user engaged with the AI. Moreover, from the point of view of contributing to the creation of work like in the case of choosing the lighting and other aspects in taking a photograph, the user does not make such creative choices in using AI which directly reflect in the output of the AI. Hence, the user should not be considered the author. Further, a practical problem with making the user of AI the author of work would be to choose the author amongst different users who may use the same AI to generate the same output.[53]

C. *Programmer and User as the author in other jurisdictions*

In the UK, Section 9(3) CDPA read with Section 178 CDPA applies to work created by AI, and the author of the work is the "*person by whom the arrangements necessary for the creation of the work are undertaken".*[54] *Nova Productions Ltd v Mazooma Games Ltd & Ors* is a UK case where the Court did not consider players of a video game to be the author of frames of video games as they did not contribute the requisite "skill or labour", and merely played the game.[55] This case lends support to the view that the user would not have a claim to authorship as he does not contribute "skill and labour" to the output of the AI. Instead, the Whitford Committee report of the UK can be cited in favour of the programmer as the author - "*the author of the output can be none other than the person, or persons, who devised the instructions and originated the data used to control and condition a computer to produce a particular result*."[56] A Chinese case, *Shenzhen Tencent v Yinxun* can also be cited in favour of the programmer as the author. The case recognised a relationship between the humans supervising the AI and the output of the AI. The judgment recognised that there was a direct connection between the intellectual activity of the persons operating the AI and the output produced by the AI.[57] It further

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[52] Samantha Fink Hedrick, I Think, *Therefore I Create: Claiming Copyright in the Outputs of Algorithms,* 8 NYU J. INTELL. PROP. & ENT. L. 324 (2019).

[53] Ibid.

[54] Goold P, supra note 32.

[55] Nova Productions Ltd v Mazooma Games Ltd & Ors [2007] EWCA Civ 219.

[56] Report of the Whitford Committee to Consider the Law on Copyright and Designs.

[57] Kan He, *Another decision on AI-generated work in China: Is it a Work of Legal Entities?* (2021), https://ipkitten.blogspot.com/2020/01/another-decision-on-ai-generated-work.html (last visited Oct 30, 2021).

recognised that humans intervened in the creative process of the AI and because the operating group of Tencent selected and supervised the data input into the AI, Tencent was considered the author of the work.[58]

VII. Ownership from the point of view of Copyright Law justifications

A. *Incentive theory*

The incentive theory, which grants copyright as an incentive for the creation of work, does not require granting copyright to AI.[59] Since AI is not sentient and does not work on its own as it is externally programmed, incentives of copyright do not affect the working of AI. Programmers of AI may be incentivised by copyright protection to develop AI which produces work.[60] In fact, not recognising copyright in favour of the programmer of the AI in the output of AI may act as a disincentive to develop AI which produces work.[61] For example, it has been said regarding the famous monkey selfie case that Mr Slater would not have been incentivised to leave his camera for a monkey to click a photograph if he knew that he wouldn't own the copyright in the photograph.[62] Thus, there are strong arguments in favour of the programmer having the copyright.[63] The argument against the programmer being granted copyright as per the incentive theory would be the presence of incentives other than copyright to develop AI.[64] Further, giving the programmer copyright over the output of AI may lead to the "problem of double-dipping" whereby the programmer would have copyright over both AI and its output.[65]

B. *Personality theory*

The personality theory, which protects the reflection of the personality of a person in a work, does not require granting copyright to AI. This is because AI cannot be said to have a personality like the personality of a human which was envisaged to be protected by the personality theory.[66] To the extent that the programmer cannot be said to have contributed creatively to the output of AI and to the extent that AI works like a black box and produces unpredictable results, the personality of the programmer cannot be said to be reflected in the output of AI. Thus, the programmer does not need to be granted copyright as per the personality theory. Given the limited role of the user in making creative inputs to the AI, the output of AI cannot be said to reflect the personality of the user so the user would need to be granted copyright as per the personality theory.

C. *Labour theory*

The labour theory, which protects the "fruits of one's labour", does not require granting copyright to AI.[67] Though AI processes data to generate output, it cannot be said that AI puts "labour" into the work in the sense that John Locke used the term "labour" when contemplating the protection of labour.

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[58] Ibid.

[59] Narayani Anand, *Artificial Intelligence As the New Creator - Changing Dimensions in Copyright Law*, 6 CMET 103 (2019).

[60] Samantha Fink Hedrick, supra note 52.

[61] Kalin Hristov, *Artificial Intelligence and the Copyright Dilemma*, 57 IDEA 431 (2017).

[62] Nina I. Brown, *Artificial Authors: A Case for Copyright in Computer-Generated Works*, 20 COLUM. Sci. & TECH. L. REV. 1 (2018).

[63] Samantha Fink Hedrick, supra note 52.

[64] Victor M. Palace, supra note 48.

[65] 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).

[66] Narayani Anand, supra note 59.

[67] Fenna Hornman, *A robot's right to copyright*, (last visited Oct 30, 2021). http://arno.uvt.nl/show.cgi?fid=145318

The labour sought to be protected is human labour[68] and thus, AI would not be granted copyright as per this theory. The programmer can be said to have put labour into programming and training the AI, but it remains questionable if the programmer has put labour into the creation of the work. Moreover, the labour of the programmer in programming the AI can be recognised by granting copyright in the program of the AI. The user of AI cannot be considered to have contributed labour to the output of the AI, and hence does not need to be granted copyright in the output of the AI as per this theory.

D. *Moral Rights*

Moral rights should not be recognised in AI.[69] Since AI is not sentient and is not conscious of how its output is used once it is generated, it would not make sense to recognise moral rights in the AI as the AI cannot exercise its rights such as the "right to integrity" or the "right to paternity". Further, it would not be right to recognise the output of the AI as that of the programmer or user through the "right to attribution" as it cannot be said that the output of AI is the creation of the programmer or user. The output of AI is created autonomously and it is unpredictable to the user and programmer. Thus, it would not be right to grant moral rights to the programmer or user, moral rights being granted to protect the dignity of the author who creates the work.

E. *Utilitarian Theory*

Utilitarianism warrants more creative work to be produced for the public to access.[70] Thus, the public would be benefitted when more work reaches them by recognition of copyright in the output of AI. Thus, a case is made for copyright to be granted as per this theory.

VIII. Possible Solutions

A. *Work enters the Public domain*

As per copyright justifications such as the labour theory and personality theory, if the programmer and user cannot be considered to have contributed their personality or labour to the output of the AI and if AI is not anthropomorphised to consider it to be the author, it would be a plausible solution to have the work enter into the public domain. The fact that there exist incentives other than copyright for developing AI which creates work[71] weighs in favour of having the work directly enter into the public domain. The AI itself does not need any incentive to create work and can create an infinite number of works at no extra cost.[72] However, not granting authorship in the output of AI would imply treating work created by AI differently from work created by humans whereas work created by AI cannot on its own be distinguished from work created by humans. This raises the question of whether the work created by AI should be treated differently. The work created by AI and work created by humans should not be treated differently in absence of utility of treating the works differently and to avoid spending resources to confirm if the work was created by a human alone and not AI when such a claim is made.

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[68] Margot E. Kaminski, *Authorship, Disrupted: AI Authors in Copyright and First Amendment Law,* 51 U.C.D. L. REV. 589 (2017).

[69] Martin Miernicki and Irene Ng (Huang Ying), *Artificial intelligence and moral rights,* 36 AI & SOCIETY 319 (2021).

[70] Narayani Anand, supra note 59.

[71] Robert Yu, supra note 65.

[72] Ayush Pokhriyal & Vasu Gupta, *Artificial Intelligence Generated works under Copyright Law,* 6(2) NLUJ Law Review 93 (2020).

B. *Compulsory license for the work under Section 31A*

One possible solution is for the provision of Section 31A, Copyright Act, which deals with compulsory licensing of published or unpublished work, to be flexibly interpreted. Section 31A could cover the output of AI in case nobody is considered the author or owner of the work created by AI. This may be the case when the programmer or user is not considered to have caused the work to be created and even the AI is not considered the author. Section 31A reads, "*Compulsory licence in unpublished or published works - (1) Where, in the case of any unpublished work or any work published or communicated to the public and ... the author is dead or unknown or cannot be traced, or the owner of the copyright in such work cannot be found, any person may apply ... for a licence to publish or communicate to the public such work ...*". Through a flexible interpretation of Section 31A, work created by AI can be considered work where the "*author is ... unknown and the owner ... cannot be found*", thereby allowing the user or programmer to then apply for making use of the work.

C. *Recognising limited personhood for AI*

Another solution could be to consider AI as the author and owner of work by recognising limited personhood for AI and having a person behind the AI exercise copyright on its behalf. For instance, in India, Hindu idols have been considered juristic persons.[73] As per *Pramatha Nath Mullick v Pradyumna Kumar Mullick,* the rights of Hindu idols would be exercised by the manager of the Hindu idol who could exercise powers just like the manager of an infant heirs' estate exercises powers.[74] Similarly, AI can also be considered a juristic person and the programmer or user may be allowed to exercise the copyright in the output of the AI, on behalf of the AI.

D. *Programmer, user, or data supplier as "author" under Section 2(d)(vi)*

As per Section 2(d)(vi) of the Copyright Act, 1957, the "*author means .. in relation to any literary, dramatic, musical or artistic work which is computer-generated, the person who causes the work to be created*". If Section 2(d)(vi) were to be interpreted to consider output produced by AI to be computer-generated work, and if humans, and not AI alone, could be said to have "*caused the creation of the work*", the human who is considered to "*cause the creation of work*" would be considered the author.

As compared to the user who does not make a creative input that directly shapes the output of the AI, the programmer who programs and trains the AI can be considered, although in a limited sense, to have "*caused the work to be created*" and would have a better claim than the user under Section 2(d)(vi). This supplier of data to AI would have a weak claim to authorship because of the principle of Copyright Law that copyright protects not ideas, but persons who give expression to ideas. The supplier of data to the AI would have a weak claim because he does not contribute to the expression of the output of AI. Moreover, the supplier of data to the AI merely supplies the data to the AI which alone does not "*cause the work to be created*" as per Section 2(d)(vi).

E. *Joint authorship*

Another solution could be to grant joint authorship of the work to the programmer, user, data supplier, and AI itself. The output generated by AI, along with being a result of AI processing the data, is also a result of the contribution made by the programmer in programming and training the AI, the contribution of the supplier of data to the AI in providing the very fuel which makes the AI work and contribution of the user in interacting with the AI through his inputs. Providing joint authorship to the

[73] Pramatha Nath Mullick v. Pradyumna Kumar Mullick (1925) 27 497 BOMLR 1064.
[74] Ibid.

programmer, user, data supplier and AI itself would be a way of recognising the contributions of each of them in the entire process of creation seen as one, from programming the AI to the output that AI generates.

F. *Sui Generis Right for work created by AI*

It has been suggested that there could be a sui generis right to protect work created by AI.[75] It would do away with the need to accommodate work created by AI into the traditional Copyright Law concepts of originality, minimum degree of creativity, authorship, and ownership. Further, the duration of the enjoyment of the right should be such that work created by AI must not lead to crowding out from the market of work created by humans.[76]

IX. Analysis of different kinds of AI

The analysis made above would vary for the different categories of AI. When it comes to assessing originality as per the subjective criteria of originality by looking at whether the process of creation involved creativity, Artificial General Intelligence, and Super-Intelligent AI could be said to fulfil the criteria as they would contribute "creatively" to producing an output. This is so because Artificial General Intelligence can perform varied tasks across domains and Super-Intelligent AI surpasses human intelligence, and hence both can be said to act "creatively". Similarly, Strong AI would pass the subjective criteria of originality as it functions by thinking autonomously rather than through simulation and hence could be said to act "creatively". In contrast, Weak AI and Artificial Narrow Intelligence would have a lesser claim than Artificial General Intelligence, Super-Intelligent AI, and Strong AI when it comes to assessing originality as per the subjective criteria. Weak AI performs programmed functions through simulation and Artificial Narrow Intelligence performs tasks only in a single domain, and thus neither of them can be said to act "creatively". Further, Machine Learning (ML) and formulaic AI must be distinguished when assessing originality.[77] ML learns to learn on its own and hence can be said to act "creatively". On the other hand, AI which works on pre-generated templates may not qualify the subjective criteria of originality.

When assessing whether AI should be granted copyright as per the personality theory, a claim can be made that Artificial General Intelligence, Super-Intelligent AI, and Strong AI should be granted copyright as these kinds of AI can be said to have a personality. Artificial General Intelligence is intelligent across domains, Super-Intelligent AI surpasses human intelligence and Strong AI thinks autonomously, thereby giving them a strong claim to copyright as they could be said to possess personality as per the personality theory. On the other hand, Weak AI and Artificial Narrow Intelligence cannot be said to have a personality that needs to be protected as per the personality theory, as Artificial Narrow Intelligence performs tasks only in a single domain and Weak AI performs programmed functions through simulation. A case exists for according personhood to Artificial General Intelligence, Super-Intelligent AI, and Strong AI, which would enable them to be granted ownership. On the other hand, Weak AI and Artificial Narrow Intelligence would have a weak claim to personhood as these AI are limited to a single domain and are mere simulations.

X. Conclusion

This paper has analysed the issue of authorship and ownership in work created by AI through the lens of Indian Copyright Law and copyright law justifications. Firstly, AI is different from other

[75] Dilan Thampapillai, *The Gatekeeper Doctrines: Originality and Authorship in Australia in the Age of Artificial Intelligence*, WIPO-WTO Colloquium Papers (2019).
[76] V.K. Ahuja., *Artificial Intelligence and Copyright: Issues and Challenges*, ILI Law Review Winter Issue (2020).
[77] Russ Pearlman, supra note 30.

technological tools such as a camera because AI creates work autonomously. Such work would qualify the test of originality to the extent that it is not copied from other work. It would also qualify "minimum degree of creativity" when assessed objectively. While AGI, Super-intelligent AI, and Strong AI would qualify the subjective criteria of "minimum degree of creativity", the same cannot be said of ANI and Weak AI. Section 2(d)(vi) of the Indian Copyright Act is inadequate to deal with work created by AI. Instead, AI can be considered an author under Section 2(d)(i) of the Copyright Act. In addition to being considered the author, AI would be considered the owner of work if it is granted legal personhood.[78] Under Section 2(d)(vi), the programmer of AI can be considered the author of the work and would have a better claim to authorship than the user or data supplier of AI. Neither the incentive theory, personality theory, or labour theory requires granting copyright to AI. But as per the utilitarian theory, the copyright must be granted. Thus, the possible solutions to the issue of authorship and ownership in work created by AI are that the work enters into the public domain, compulsory licenses are sought to make use of the work, recognising limited personhood for AI, joint authorship for the persons involved or recognising a sui generis right for work created by AI.

[78] Andres Guadamuz, *Do androids dream of electric copyright? Comparative analysis of originality in artificial intelligence generated works*, 2 Intellectual Property Quarterly 169 (2017).