

ARTIFICIAL INTELLIGENCE GENERATED WORKS UNDER COPYRIGHT LAW

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ABSTRACT

The world as we know it has changed tremendously in leaps and bounds with the evolution of technology, but changes in law haven't always followed in synchrony. Traditionally creative works like writing and cooking which were conceptualized only to the ingenuity of humans, have now become an apparent task of Artificial Intelligence. Since then, great advancement in programming and computational intelligence has opened many possible avenues of work for computers, one of which being creative works. This upsurge of mechanically created original work has led itself to a collision course with the Copyright Law in India, raising doubts in the minds of legal practitioners as to who shall be the owner of the said original creation. Applying the traditional rules of intellectual property law does not yield a plausible solution to this problem.

This paper shall discuss whether autonomously developed mechanical creation can be copyrightable, and if yes then what are the basic impediments in the current legal scenario which prevents machines and Artificial Intelligence to be allowed such Intellectual

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Property Rights. The paper shall discuss the different scenarios of Copyright ownership in such mechanically generated works.

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I. INTRODUCTION

Artificial Intelligence²¹³ (*hereinafter* referred to as “**AI**”) is not a new concept, especially for the Science-fiction community. Its conceptual existence dates as far as 1927 in the movie ‘Metropolis’, which had the earliest depiction of humanoid robots and Artificial Intelligence, raising havoc over the city.

As the new age dawns upon AI, these devices have been able to perform wonders that were once unthinkable. They can make their own music,²¹⁴ among other things and have started making their presence felt in many more fields that were thought to be a playground of humans. AI has even started to assist novelists in their work,²¹⁵ and it seems that the requirement set by Geoffrey Jefferson²¹⁶ has been met, up to an extent.

As AI takes a more active role in our day to day lives, it becomes important to address the question regarding the status of ownership of the work created by AI. The idea that the machine is capable of intellectual labour is beyond the scope of current copyright law.²¹⁷ Thus we will analyse if AI is capable of ownership under the Copyright law, the implications thereof and its drawbacks. We shall also discuss the alternate options of

²¹³ Joel Shurkin, *Expert systems: the practical face of artificial intelligence*, 86 TECH. REV. 72 (1983) [*hereinafter* “**Shurkin**”].

²¹⁴ Cade Metz, *Google’s AI Invents Sounds Humans Have Never Heard Before*, WIRED (May 15, 2017, 7:00 AM), <https://www.wired.com/2017/05/google-uses-ai-create-1000s-new-musical-instruments/>.

²¹⁵ David Streitfield, *Computer Stories: A.I. Is Beginning to Assist Novelists*, THE NEW YORK TIMES (Oct. 18, 2018), <https://www.nytimes.com/2018/10/18/technology/ai-is-beginning-to-assist-novelist.s.html>.

²¹⁶ Geoffrey Jefferson, *The Mind Of A Mechanical Man*, BRIT. MED. J. 1110 (1949).

²¹⁷ Trevor W. Nagel, *Software Development: The Limits of Existing Legal Protection*, 9(3) HARV. INTL. REV. 46 (1987) [*hereinafter* “**Nagel**”].

either giving ownership to the developer or assigning the ownership of work created by AI to public domain.

II. ARTIFICIAL INTELLIGENCE - OVER THE YEARS

AI is a growing field of technology. "Artificial Intelligence" is a term used to describe a specialty field within computer science that is aimed at producing computers that exhibit intelligent conduct.²¹⁸ Artificial Intelligence was originally coined and defined by Prof. John McCarthy (also known as Father of A.I.) in the most simple terms as "the science and engineering of making intelligent machines, especially intelligent computer programs."²¹⁹ It is hard to define intelligence without human context. Maybe that is the reason why the idea of machines having intelligence independent of any human contribution seems implausible. However, the recent development of powerful hardware and software has in fact made it possible to develop technology that can perform complex tasks without any human intervention.

In 1949 Geoffrey Jefferson, a neurosurgeon stated "*Not until a machine can write a sonnet or compose a concerto because of thoughts and emotions felt, and no: by the chance fall of symbols, could we agree that machine equals brain-that is, not only write it but know that it had written it.*"²²⁰

²¹⁸ Shurkin, *supra* note 213.

²¹⁹ John McCarthy, *what is artificial intelligence?* STANFORD UNIVERSITY, (Nov. 12, 2007), <http://jmc.stanford.edu/articles/whatisai/whatisai.pdf>.

²²⁰ Nagel, *supra* note 217.

In 1950, Alan Turing discussed the question – Can Machines think? The better way to phrase that question could have been – Can machines think like humans, but without humans? Alan Turing proposed a game where an interrogator has to figure out which one is human and which one is the computer by asking questions. The interrogator has to decide based on the answers only. The computer has to make the interrogator believe that it is human.

This test checks how far a machine can imitate humans or in other words think like humans. This test can be used to check whether a machine qualifies as an Artificially Intelligent machine. An AI machine has to be differentiated from a normal machine because their application is different. An AI is not a tool like a machine. It is an imitation of human intelligence and as such could be treated as human equivalent when judging its contribution in a production process.

Artificial Intelligence works by combining large amounts of data with fast, iterative processing and intelligent algorithms, which allows the software to learn automatically from patterns in data.²²¹ It is supposed to exhibit and stimulate human like intelligence, in novel situations with a goal achieving mindset in complex environment.²²²

²²¹ *Artificial Intelligence – What it is and why it matters*, SAS, https://www.sas.com/en_in/insights/analytics/what-is-artificial-intelligence.html.

²²² 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.

It involves combination of machine learning,²²³ deep learning,²²⁴ neural network, natural language²²⁵ processing and computer vision.

Initially board games had been reserved exclusively for humans, but in 1997, IBM's Deep Blue, a chess-playing computer, successfully won two times, had three draws, and had just one defeat in matches against the world chess champion Garry Kasparov, using a heuristic search technique.²²⁶ In 2003, the German Deep Fritz chess-playing computer drew a four-game match against Garry Kasparov. In 2015, AlphaGo, an AI program by Google, defeated the European Go champion by five games to nil. This was the first time a computer program had defeated a human professional Go player; an achievement in its own right.

These machines have also been able to make music and very recently the world's first album composed and produced by an Artificial Intelligence was released.²²⁷ It is becoming evident that this growing field of technology is becoming capable of actions independent of human intervention and control. When an Artificial Intelligence creates work that

²²³ Sendhil Mullainathan & Jann Spiess, *Machine Learning: An Applied Econometric Approach*, 31(2) J. ECON. PERSP. 87 (2017).

²²⁴ Wehle, Hans-Dieter, *Machine Learning, Deep Learning, and AI: What's the Difference?*, RESEARCHGATE, (2017), https://www.researchgate.net/publication/318900216_Machine_Learning_Deep_Learning_and_AI_What's_the_Difference?.

²²⁵ Aravind J. Joshi "Natural Language Processing", 253 (5025) AM. ASS'N OF ADVANCEMENT OF SCI. 1242 (1991).

²²⁶ *Deep Blue*, IBM'S 100 ICONS OF PROGRESS, (September 13, 2011), <https://www.ibm.com/ibm/history/ibm100/us/en/icons/deepblue/>.

²²⁷ Dom Galeon, *The World's First Album Composed and Produced by an AI Has Been Unveiled*, FUTURISM (Aug. 21, 2017, 4:13 PM), <https://futurism.com/the-worlds-first-album-composed-and-produced-by-an-ai-has-been-unveiled>.

does not have any contribution from humans, should humans be given the copyright claim under the intellectual property rights?

III. CAN AI BE GIVEN OWNERSHIP OF INTELLECTUAL PROPERTY UNDER THE CURRENT COPYRIGHT LAW?

For a work to be given protection under copyright law there are a few requirements. Since it is not the idea but the expression of ideas that can be copyrighted, it is essential that the form of the art be in a tangible form, creative enough that it perceptibly differs from the original work²²⁸ or is an original work.

Within the framework of the copyright law, intellectual property ownership rights depend initially on "authorship."²²⁹ That is, the person claiming the copyright must either be the author himself, or he must have succeeded to the rights of the author."²³⁰ The intellectual property law provides right of protection to the creators and inventors with respect to their inventions, designs and artistic works. The purpose of these laws are to provide people with incentives to develop creative works that are valuable for the society and profit from it by ensuring there is no misappropriation of their works by others.

In the case of *Andrien v. Southern Ocean County Chamber of Commerce*,²³¹ the court held that for a work of authorship to exist, there

²²⁸ *Bleinstein v. Donaldson Lithographing Co.*, 188 U.S. 239 (1903).

²²⁹ Copyright Law of the United States, 17 U.S.C. §201(a) (1982).

²³⁰ *Id.*

²³¹ *Andrien v. Southern Ocean County Chamber of Commerce*, 927 F.2d 132, 134-35 (3d Cir. 1991) (U.S.).

must be a legally recognized author who has created the work. The author is generally the person who conceives the copyrightable expression and fixes it, or causes it to be fixed in a tangible form.²³² The author has been limited to living human beings for all purposes in the Copyright Act. This is evident from different sections that discuss about the kin of the author, lifetime of the author, and death of the author.²³³

In most cases where the creator of these software are humans, application of law is unchallenging as it suits the Copyright law's concept of person being the original author/creator, but as Artificial Intelligence becomes more "intelligent" in their role as the assistants of humans in the creation of a wide range of products and become more independent to develop their own individual products; the law here does not provide a clear resolution. Can AI then be deemed as an inventor, author and own/sell intellectual property?²³⁴

In the famous Macaque selfie case,²³⁵ a monkey had mistakenly taken a selfie, a dispute arose as to whom the copyright of the selfie should go. PETA, an animal rights organization claimed that the monkey owned rights to the picture. The photographer whose camera the monkey used claimed he owned the rights since he had made significant creative contribution. The court held that an animal cannot be the author/creator and cannot protect its claim. In these cases, the court tries to find the closest

²³² Woodrow Barfield, *Intellectual Property Rights in Virtual Environments: Considering the Rights of Owners, Programmers and Virtual Avatars*, 39 AKRON L. REV. 649 (2006).

²³³ The Indian Copyright Act, No. 14 of 1957, India Code (1957), Ch. V.

²³⁴ Pamela Samuelson, *Allocating Ownership Rights in Computer-Generated Works*, 47 PITT L. REV. 1185 (1985-1986). [hereinafter "Samuelson"]

²³⁵ *Naruto et al v. David Slater*, No. 16-15469, 2018 WL 1902414 (9th Cir. Apr. 23, 2018).

human link that caused the work. Finally, the picture was put in public domain.

Under the American Copyright Act,²³⁶ a work is fixed in a tangible medium of the expression "when its embodiment in a copy or phono record, by or under the authority of the author, is sufficiently permanent or stable to permit it to be perceived, reproduced, or otherwise communicated for a period of more than transitory duration."²³⁷

The requirement for "tangible form" is fairly loose since it only has to be permanent or stable to permit it to be "perceived, reproduced, or otherwise communicated." Thus, tangible form is not limited to actual physical form like on paper, canvas or film reel but can be even on a computer screen. This implies that to qualify for the requirement of tangible form an AI can make do with just displaying the end result or in any form capable of being perceived, as long as it is able to be retained for long enough time.

In *Tata Consultancy Services v. State of Andhra Pradesh*,²³⁸ computer programs were held to be tangible. In *R.G Anand v. M/S. Delux Films*,²³⁹ it was pointed out that the law does not recognize property rights in abstract idea, nor is an idea protected by a copyright and it becomes a copyright, and subsists only when the idea is given embodiment in a tangible form. In an

²³⁶ The Copyright Act, 17 U.S.C. §102 (1976).

²³⁷ *Fixed in a Tangible Medium of Expression*, CORNELL LAW SCHOOL, (July 11, 2019, 7:02 PM) https://www.law.cornell.edu/wex/fixed_in_a_tangible_medium_of_expression.

²³⁸ *Tata Consultancy Services v. State of Andhra Pradesh*, (2004) 137 STC 620 (India).

²³⁹ *R.G Anand vs M/S. Delux Films*, AIR 1978 SC 1613 (India); *Bobbs-Merrill Company v. Isidor Straus & Nathan Straus*, 210 US 339 (28 S.Ct. 722, 52 L.Ed. 1086).

American case of *MA1 Systems Corp. v. Peak Computer, Inc.*,²⁴⁰ it was held that the loading of software into a computer's random-access memory was sufficiently permanent for it to be deemed fixed.

So far, AI seems to be eligible for creating tangible work. Conferring the authorship rights is dubious since courts till now have tried to give it to the closest human person who caused the work to be created.

The Indian Copyright Act requires a certain amount of creativity to characterize work as copyrightable. §2(y)²⁴¹ defines work as a literary, dramatic, musical or artistic work, a cinematograph film, a sound recording. §2(o)²⁴² expands on the list to include computer programs, tables compilations etc. §13²⁴³ enlists what work qualifies for a copyright claim. §52²⁴⁴ gives the exceptions.

This 'modicum of creativity' standard was laid down in the famous case of *Eastern Book Company v. D.B Modak*.²⁴⁵ The word 'original' does not mean that the work must be the expression of original or inventive thought. As regards to derivative work, originality is a matter of degree depending on the amount of skill, judgment or labour that has been involved in making the compilation.²⁴⁶ The judgement also defined primary work as literary work not based on the existing subject matter. It defined secondary or derivative work as work based on existing subject matter. As the copyright

²⁴⁰ *MA1 Systems Corp. v. Peak Computer, Inc.*, 991 F.2d 511, 518 (9th Cir. 1993).

²⁴¹ The Indian Copyright Act, No. 14 of 1957, India Code (1957).

²⁴² *Id.*

²⁴³ *Id.*

²⁴⁴ *Id.*

²⁴⁵ *Eastern Book Company v. D B Modak*, (2008) 1 SCC 1 (India).

²⁴⁶ *Id.*

pertains to the expression of idea and not the idea itself, it does not require that the work should be in an “original form” but just that it should not be copied from another work.²⁴⁷

The copyright work which comes into being should be original in the sense that by virtue of selection, coordination or arrangement of pre-existing data contained in the work, the work is somewhat different in character as produced by the author. Although the programmer may help in creating a framework within which the computer makes selection or arrangement of data, but it is actually the computer that makes the selection,²⁴⁸ and going through a combination of selections is what computers are apt for. Machines have been able to exhibit sufficient originality to qualify for copyright protection.

An AI is capable of producing original as well as derivative work. In 1993, the author used a computer program (heuristically based expert system) to copy the style of another writer Jacqueline Susann, and assist him in writing the book *Just This Once*.²⁴⁹ In this case there was a collaboration between the computer program and the author. The book could not be said to be directly copying the original book of Jacqueline Susann, *Valley of the Dolls*. The computer was creative. Although it had emulated the book’s style, the end product was a collaboration between the

²⁴⁷ London Press Limited v. University Tutorial Press Limited, [1916] 2 Ch 601 (U.K.); Macmillan and Company v. K. & J. Cooper, AIR 1924 PC 75 (India).

²⁴⁸ Eastern Book Company v. D B Modak, (2008) 1 SCC 1 (India).

²⁴⁹ SCOTT FRENCH, JUST THIS ONCE (1993).

program and the author, which was completely new, something perceptively and evidently different than the “source material.”

AI has also been producing music, Google Magenta’s NSynth Super, Amper Music, IBM’s Watson Beat, Spotify’s Creator Technology Research Lab, and Jukedeck create music using AI. Most of them use deep learning networks.²⁵⁰ The music created is completely original. It is created with little to no input from the user.

It is obvious that the music created or the books written by AI are eligible for copyright protection²⁵¹ but ambiguity begins in determination of ‘to whom’ the copyright should/would go. For the AI to get the claim, it is essential that AI is a legal person. It is also required that the work was done by AI independent of any human association.

What separates AI from machines which are designed to perform a limited set of actions strictly under human control is the ability of the AI to apply existing knowledge to a new set of facts or problems.”²⁵² Facebook created an AI chat-bot that developed its own language and started communicating with other chat-bots although that was not the purpose its creator intended.²⁵³ It can be seen that AI is developing in unexpected ways, solving problems it was not supposed to.

²⁵⁰ Dani Deahl, *How AI- Generated Music Is Changing The Way Hits Are Made*, THE VERGE (Aug. 31, 2018, 9:00 AM), <https://www.theverge.com/2018/8/31/17777008/artificial-intelligence-taryn-southern-amper-music>.

²⁵¹ Karl F. Milde, Jr., *Can a Computer Be and “Author” or an “Inventor”*, 51 J. PAT. OFF. SOC’Y 378 (1969).

²⁵² Bob Ryan, *AI’s Identity Crisis*, BYTE, Jan. 1991, at 239, 240.

²⁵³ Andrew Griffins, *Facebook’s Artificial Intelligence Robots Shut Down After They Start Talking To Each Other In Their Own Language*, INDEPENDENT (July 31, 2017, 5:10 PM)

It has been argued that all the work created by Artificial Intelligence is a derivative work of generator program.²⁵⁴ But in general, computer-generated works do not incorporate recognizable blocks of expression from the underlying program or from the data base that the program draws upon in the generative process. For this reason, computer-generated output should not automatically be considered "derivative works" merely because in common parlance it could be said that the output was "derived" from or "based upon" the generator program.²⁵⁵

It's plausible that AI is creative and capable of original work. Thus, it seems that the only barrier for AI to get copyright claim is recognition by the legislation. Giving AI authorship makes sense in a world that is increasingly being reliant on AI for a range of services.

AI seems to be eligible for copyright protection under the law. It ticks almost all the boxes. It is creative and capable of creating original content in a tangible medium but it still cannot be given authorship under the current law. To be eligible for authorship, AI must first be given a legal identity independent of its developer.

IV. CAN AI BE TERMED AS A LEGAL ENTITY?

The very first challenge that we face for developing an Intellectual Property Right Regime that caters to Artificial Intelligence is whether

<https://www.independent.co.uk/life-style/gadgets-and-tech/news/facebook-artificial-intelligence-ai-chatbot-new-language-research-openai-google-a7869706.html>.

²⁵⁴ Darin Glasser, *Copyrights in Computer-Generated Works: Whom, if Anyone, Do We Reward?*, 1 DUKE L. & TECH. REV. 24 (2001).

²⁵⁵ *Id.*

Artificial Intelligence can be given a legal entity. Black's Law Dictionary defines "legal entity" as "a lawful or legally standing association, corporation, partnership, proprietorship, trust, or individual. It has legal capacity to (1) enter into agreements or contracts, (2) assume obligations, (3) incur and pay debts, (4) sue and be sued in its own right, and (5) to be accountable for illegal activities."²⁵⁶

Law grants rights to only those who are recognized by law either as natural or artificial persons. Till now jurisprudence around the world has not officially accepted the proposal to grant legal identity to these non-bionic persons. Though recent trends tend to show that such legal personhood can be given to machines. Recently in 2017 an Artificial Intelligent Robot named Sophia was granted the world's first robot citizenship in a country which has been time and again barraged by critics for its blatant violation of Human Rights; Saudi Arabia. Sophia was granted full citizenship.²⁵⁷

Is it fair to assume that these rights are the same as her fellow Saudi citizens – and of humans more generally around the world? Sophia is not the only one with such rights, recently artificial intelligence 'boy' Shibuya Mirai became first AI bot to be granted residency in Tokyo, Japan. Astonishingly an Artificial Intelligent robot named SAM developed by Arvid Jense and Marie Caye, is said to have its own bank account.²⁵⁸ Creator

²⁵⁶ *Legal Entity*, BLACK'S LAW DICTIONARY (10th ed. 2014).

²⁵⁷ Zara Stone, *Everything You Need To Know About Sophia, The World's First Robot Citizen*, FORBES (Nov. 7, 2017, 12:22 PM), <https://www.forbes.com/sites/zarastone/2017/11/07/everything-you-need-to-know-about-sophia-the-worlds-first-robot-citizen/>.

²⁵⁸ Renske Mehra, *Robot Sam is now working for Wall Street*, INNOVATION ORIGINS (Feb. 12, 2018) 6:34 PM) <https://innovationorigins.com/robot-sam-now-working-wall-street/>.

of Sophia, Dr. David Hanson in his paper “Entering the Age of Living Intelligence Systems and Android Society” has predicted that by 2045 robots would have developed themselves so much that they would insist for their civil rights.²⁵⁹

It is a concept of Common Law that only a person can sue or be sued and it certainly also applies to Intellectual Property Rights. To be able to apply for Intellectual Property Rights and also to sue for any infringement of such rights, the body has to be a Legal Person. For this reason, the issue of personhood for non-human entities becomes an important topic when discussing legal rights to artificial intelligence.

The jurisprudence has since the industrial revolution developed itself due to necessity to include body corporates and corporations as separate legal entities with the ability to enforce their rights. The concept is that ‘persona ficta’ (Latin for legal person) has a legal name and has certain rights, protections, privileges, responsibilities, and liabilities in law, similar to those of a natural person.²⁶⁰ Its main idea is that Legal/Judicial personality allows one or more natural persons (universitas personarum) to act as a single entity (body corporate) for legal purposes and yet the identity

²⁵⁹ David Hanson, ‘*Entering the Age of Living Intelligence Systems and Android Society*’ Playstation (2018), <http://Detroit:~20Become~20Human~20will~20be~20out~20on~20the~20025th~20May~202018~20exclusively~20on~20PlayStation~204.%20To~20purch~20the~20game~20and~20for~20more~20information~20please~20visit:~20https://www.playstation.com/en-gb/>.

²⁶⁰ Vijay Sardana, *Jurisprudence - Nature and Concept of Legal Person*, LAW NOTES FOR STUDENTS, (June 25, 2019, 8:56 PM), <http://lawnotesforstudents.blogspot.com/2017/05/jurisprudence-nature-and-concept-of.html>.

of the natural person was separate from the legal entity. This concept was developed due to the necessities arising in human society.

The very words "Juristic Person" connote recognition of an entity to be in law a person which otherwise is not. In other words, it is not an individual natural person but an artificially created person which is to be recognized in law as such.²⁶¹ Application of the concept of legal personality to a non-human entity is not limited and may be applied in accordance with law as and when required. Artificial Personality may be granted to any non-human entity, "e.g., idols, group of human beings, a fund."

A religious idol may also be granted such identity even though it is clear that it won't be able to carry out tasks such as litigation or coming into contractual obligations themselves like signing a contract. The law appoints agents which act as representatives of such in-animate agencies, to represent them and the acts of such agents are imputed to the legal persona of the idol and are not the juristic acts of the agent themselves.²⁶² In many cases, the Supreme Court of India has granted legal and juristic identity status to religious Idols making them capable of holding property and paying taxes through their representatives.²⁶³ Similar process can be applied to Artificial Intelligence.

When machines are more capable than mere idols and religious institutions, they can be granted legal identity for the purposes of granting

²⁶¹ *Shiromani Gurudwara Prabandhak Committee Amritsar v. Shri Som Nath Dass*, (2000) 4 SCC 146 (India).

²⁶² PATON, GEORGE WHITECROSS, *A TEXTBOOK OF JURISPRUDENCE*, 349, 350 (David P. Derham et al. eds., 3rd ed.) (1967).

²⁶³ *Yogendranath Naskar v. CIT*, AIR 1969 SC 1089 (India).

them civil rights. Parallel arguments of cases where animals were given rights is relevant here. In both cases there are somewhat intelligent ‘individuals.’ While many legislators staunchly hold that there has to be intelligence at par with humans that is required to achieve legal personhood, in contrast there are people with severe cognitive deficits and even young toddlers are given legal personhood,²⁶⁴ in comparison to AI which shows a high level of awareness and reasoning. So, if people with cognitive disabilities and mental retardness can be awarded legal personhood, why couldn't AI be considered a legal person, which is equally smart or sometimes, even smarter? The arrangement of law is flexible, and has as such the possibility of creating new entities by amending the existing system of law and such an act will be new innovative way of encouraging development of Artificial Intelligence research.²⁶⁵

Thus, Artificial Intelligence is capable of being given a legal identity. It is more “intelligent” than animals, more animate than idols and rivers, and capable of being represented by individuals like a corporation. So, it seems that AI might just get the copyright on work it creates. But there are a few issues in giving Artificial Intelligence these rights.

V. HURDLES IN GIVING AI COPYRIGHT

Problems begin to pour in when one says the AI produces art that has already been created by someone else. In that case if the creator of the original art wants to sue for its copyright breach, does it sue the user of the

²⁶⁴ Elizabeth L. Decoux, *In the Valley of the Dry Bones: Reuniting the Word "Standing" with its Meaning in Animal Cases*, 19 WM. & MARY ENVTL. L. & PLO'Y REV. 681, 755 (2005).

²⁶⁵ Ryan Abbott, *I Think, Therefore I Invent: Creative Computers and the Future of Patent Law*, 57 B.C. L. REV. 1079 (2016).

AI who did not consciously create that iteration? Or if it does sue the user, can the user claim that the AI created it and he had no knowledge of the work being created to be an infringement of the original creator as a valid defence?

A. THE SWEAT & BROW THEORY

One might just say, that by giving AI the right to copyright ownership, no useful end is served. An AI cannot protect its own creations as it cannot sue, it has no financial motive like other creators to protect his creations and it can produce endless creations at the blink of an eye. Enforceability of the law in respect of Artificial Intelligence is uncertain.²⁶⁶

The whole purpose of copyright law is to protect the interests of the author. Copyright act is supposed to protect the moral and economic rights of the author.²⁶⁷ Legal Scholars like Samuelson and Miller have noted that the rationale for copyright is to provide an incentive for authors to create copyrightable works. Accordingly Arthur Miller believes, since “these software and machines” currently need no such incentive to create work as there can be no copyright awarded to such entities.²⁶⁸ It is supposed to provide incentives for the creator to create more original content which is beneficial for the society and also profit from these creations.²⁶⁹

²⁶⁶ Evan H.Farr, *Copyrightability of Computer- Created Works*, 15 RUTGERS COMP. & TECH. L.J. 63,65 (1989).

²⁶⁷ *Naruto et al v. David Slater*, No. 16-15469, 2018 WL 1902414 (9th Cir., Apr. 23, 2018).

²⁶⁸ Arthur R. Miller, *Copyright Protection for Computer Programs, Databases, and Computer-Generated Works: Is Anything New Since CONTU?*, 106 HARV. L. REV. 977 (1993).

²⁶⁹ Stephen G. Breyer, *The Uneasy Case for Copyright: A Study of Copyright in Books, Photographs, and Computer Programs*, 84 HARV. L. REV. 281, 284-93 (1970); Ralph S. Brown Jr., *Eligibility for Copyright Protection: A Search for Principled Standards*, 70 MINN. L. REV. 579, 596 (1985).

Copyright protection incentivizes the author to create more work because of the certainty that that work would not be copied by unauthorized users. AI on the other hand does not need financial or social motivation to create work. It can create work in the click of a button in the blink of an eye. So, giving rights to them serves no end. The likelihood of machines requiring this incentive and having the consciousness of protecting from infringement is very low. It does not require remuneration for its hard work. A machine simply does what it is programmed to do, without financial motivation.²⁷⁰

Unless and until there is extreme anthropomorphism, and AI reaches a point where it becomes self-aware and self-determining that it starts demanding financial incentives, there isn't any need for granting exclusive ownership rights to the machine.²⁷¹ The machine developers are to be given such copyright on computer generated works, since that could provide incentives to them to develop more such AI machines. (Milde argues, that computer manufacturers need such incentives to encourage investment in computer designs).²⁷²

²⁷⁰ *Copyright Law and Artificial Intelligence*, AMERICAN BAR ASSOCIATION, (Dec. 2017, 9:00 PM), <https://www.americanbar.org/news/abanews/publications/youraba/2017/december-2017/copyright-laws-and-artificial-intelligence/>.

²⁷¹ Lorna Brazell, *Can Copyright Survive Artificial Intelligence?* SCL TECH LAW FOR EVERYONE (Aug. 2, 2018, 10:45 AM), <https://www.scl.org/articles/10139-can-copyright-survive-artificial-intelligence>.

²⁷² Samuelson, *supra* note 234.

B. THE COPYRIGHT ACT IMPLIES THE AUTHOR TO BE A HUMAN ENTITY

Under the Indian Copyright Act 1957, the term ‘author’ though defined, is somewhat left open ended in matters concerning autonomously generated computer work. §2(d)²⁷³ defines “author” (i) in relation to literary or dramatic work, the author of the work, (ii) in relation to a musical work, the composer (vi) in relation to any literary, dramatic, musical or artistic work which is computer- generated, the person who causes the work to be created.

It must be observed that the definition of author under the Indian Copyright Act does not mention of an animate individual (human) and does not hint of the legal personality of the author.²⁷⁴ It is imperative to notice is that the enactment in sub-clause (vi) patently mentions that for any computer generated work, the person causing the work to happen shall be the author. On plain perusal of the provision it does not take into consideration any computer machine which is intelligent to act as humans, it only considers those computers which are operated by human agency or has some amount of human interaction.²⁷⁵

They have considered computers as mere tool for humans to use in their creative endeavours. This creates a void in the legislation as to whether a machine which is capable of independent creative thought process can

²⁷³ The Indian Copyright Act, No. 14 of 1957, India Code (1957).

²⁷⁴ Ritvik M Kulkarni, *Of Artificial Intelligence and Authorship*, SPICY IP BLOG (Dec.11, 2016, 4:00 PM), <https://spicyip.com/2016/12/of-artificial-intelligence-and-authorship.html>.

²⁷⁵ *Who Owns Computer Generated Works*, LEARN AND DIGEST BLOG (June, 2014, 1:03 AM), <http://learndigest.blogspot.com/2014/06/who-owns-computer-generated-works.html>

have separate ownership rights? This issue can be rectified by understanding the intent of the legislation.

Under Chapter V of the Indian Copyright Act, in §22,²⁷⁶ the act talks about the term of the copyright in published literary, dramatic, musical and artistic work- where it mentions term of any work published within the “lifetime” of the author until sixty years from the beginning of the calendar year following the year in which the author “dies.”²⁷⁷ It is clear that the intention of the legislators was at that time to include only mortal beings as subjects of copyright law. Whether or not the legislators at that time did not foresee the idea of making non-living immortal entities such as Artificial Intelligence itself the subject of copyright law is still not clear. But under current law, the author must be a living being or at least a corporation comprising living beings.

Even under United Kingdom Copyright Act, the law does not provide for the computer to get the rights. It says 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.²⁷⁸

C. LEGAL PERSONHOOD

Artificial Intelligence is not a recognized legal entity and there isn't any process of registering an AI as a legal entity. While one can argue that

²⁷⁶ The Indian Copyright Act, No. 14 of 1957, India Code (1957),

²⁷⁷ Samuelson, *supra* note 234.

²⁷⁸ Copyright, Designs and Patents Act 1988, c. 10. §178 (U.K.).

even corporations are given legal identity, however, Solum believes that corporations have humans who constitute its board of directors or the senior management which exerts control over the corporations.²⁷⁹ Whether this should be followed as a precedent for giving legal personhood to AI, AI will have to exhibit a broad range of intellectual abilities before they can resemble human like cognitive and perceptual capabilities.

Presently lack of human like intellectual abilities, and just knowledge in specific field or conduct like playing chess or creating music will not be enough for taking AI into consideration for granting a status vis-a-vis legal personhood.²⁸⁰ Other reasons include lack of self-awareness in the machines.

With the software developer of the AI or the user of AI the closest natural persons, it only makes sense to grant ownership to such natural persons. In other contexts, courts routinely decline to extend legal rights to entities other than natural persons, such as animals.²⁸¹

Though these natural persons seem to be potential candidates for getting ownership, issues arise because they do not come under the definition of ‘author’ for copyright. Where the end computer generated work was done completely autonomously without human interaction, the software developer fails to comply with the definition of author in context to that particular autonomously generated AI work under the Copyright

²⁷⁹ B. Solum, *Legal Personhood for Artificial Intelligences*, 70 N.C. L. REV. 1231 (1992).

²⁸⁰ Woodrow Barfield, *Issues of Law for Software Agents within Virtual environments*, 14(6) PRESENCE: TELEOPERATORS & VIRTUAL ENV'TS, 741 (2005).

²⁸¹ *Tommy v. Lavery, et al.; Kiko v. Presti, et al*, 54 N.Y.S.3d 392 (N.Y. App. Div. 2017).

Law.²⁸² Certainly these software developers are skilled in designing such incredible coding software, yet they might have no skill at all of creating, the final computer generated work,²⁸³ such as a painting or music.²⁸⁴

VI. POTENTIAL CANDIDATES FOR COPYRIGHT OWNERSHIP

The alternatives of giving ownership to Artificial Intelligence for Artificial Intelligence created work is either giving the ownership to the developer of the Artificial Intelligence that created the work or to put the work in public domain. The developer is the closest human agent when an Artificial Intelligence creates something. A developer of Artificial Intelligence could be credited for all creations on Artificial Intelligence. Here we are assuming that the developer does not sell or license the Artificial Intelligence to someone else but uses it to create work.

Putting the work created by Artificial Intelligence in public domain is another option. By putting the work in public domain, the work is free for anyone to access and use. It makes the work readily available, accessible and free. Since the Artificial Intelligence did not incur any cost to produce the work, making the work accessible for free would not be illogical.

A. DEVELOPERS OF ARTIFICIAL INTELLIGENCE

Artificial Intelligence is different from machines that came before it for the simple reason that Artificial Intelligence does not require any human

²⁸² Ben Hattenbach; Joshua Glucoft, *Patents in An Era of Infinite Monkeys and Artificial Intelligence*, 19 STAN. TECH. L. REV. 32 (2015).

²⁸³ *Id.*

²⁸⁴ Stephen Thaler, *Neural Networks that Automatically Create and Discover*, IMAGINATION ENGINES INC. (1996), http://imagination-engines.com/iei_pcai.php.

input. Other machines and software that came before it required human intervention. As Artificial Intelligence works independent of human agency it becomes contentious whether Artificial Intelligence could be considered a tool of humans. There exists a thin line between what can be considered a tool and what can be considered a human equivalent machine.

It would be fair to attribute some part of the output of the computer to the programmer. To develop an excellent output generating machine requires high intellectual labour and persistence from the developer side. It is time consuming and expensive for the programmer, and it would be a fair reward to allow them copyright for the fruits of its intellectual labour even though the output is maybe something they might not have envisioned.²⁸⁵ After all, the machine at least starts with following the instructions of the developer.²⁸⁶ It was the programmer who gave the Artificial Intelligence the initial capability to produce the output.

Many legislators argue that developers and users of Artificial intelligence cannot be the rightful owner of the computer-generated work, because of their lack of contribution to the output. In plenty of cases the developer might now even conceive of such an output. For instance, Facebook had to shut down its program at Facebook AI Research Lab (FAIR) when they realized that an AI had developed its own unique

²⁸⁵ JOHN HAUGELAND, ARTIFICIAL INTELLIGENCE: THE VERY IDEA (1985).

²⁸⁶ *Id.*

language which the humans could not either explain or understand, and was using it to communicate to other AI.²⁸⁷

So, is there any legal doctrine where the ownership might be granted to one who not only did not conceive nor did the entity contributed in anyway in the production of such computer-generated work?

The answer is yes. The doctrine of work done under a hire agreement, is an exception to the general notion of copyright law that the author is the first owner of the output. The doctrine gives ownership rights to the employer or commissioning party who pays for the creation of such work, rather than the person who actually conceived or fixed the expression.²⁸⁸

Ownership of work in case of hire is conceptualized under §17²⁸⁹ of the Indian Copyright Act 1957, which states that in absence to a contract to the contrary, in case of literary, dramatic or artistic work done by an author under the course of its employment under a contract of service, the employer, and where the author in case of photograph taken, or a painting or portrait drawn, or an engraving or a cinematograph film made, at the instance of any person, the employer and the person at whose instance the work was made shall be the first owner of the work.²⁹⁰

²⁸⁷ 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-ofourpotentialfuture/#7f4a013292c0>.

²⁸⁸ Darin Glasser, *Copyrights on Computer-Generated Works: Whom, If Anyone, Do We Reward?* 24 DUKE L. & TECH. REV. (2001).

²⁸⁹ The Indian Copyright Act, No. 14 of 1957, India Code (1957),

²⁹⁰ The Indian Copyright Act, Ns. 14 of 1957, India Code (1957), §17(a)(c).

The rights to ownership of a lyricist or a song writer may be defeated by the producer who engages them²⁹¹ as accordance to the §17 sub clause (b) and (c).²⁹² This could be an alternative in resolving the current debate of allotting ownership right to computer generated works. The developer of the Artificial Intelligence software can be assumed as an employer and the software in itself its employee.

Also, the developer puts sufficient hard work in creation of AI. When talking about the amount of work put in, programmers could not be said to have put no work in production of that ‘specific output.’ The programmer chooses from multiple options (different model selection, setting the objective functions and further selections determining the framework within which the algorithm trains and adjusts) to create its algorithm, which generates output. The programmers then goes through extensive data and sets, with which the algorithm learns, how to decide to classify the data for training and testing purposes provided with certain limits²⁹³ (bias and variance, on which the speed and accuracy of the algorithm is determined).²⁹⁴ Similarly, a lot of complicated decision making and prior programming goes into making an algorithm for AI before it is ready to go live and let loose to create its own independent output. The amount of decisions and work put in by the programmer and the output, which is directly, or indirectly a product of the programmer’s creative

²⁹¹ Indian Performing Right Society Ltd. Vs. Eastern Indian Motion Pictures Association, AIR 1977 SC 1443 (India).

²⁹² The Indian Copyright Act, No. 14 of 1957, India Code (1957),

²⁹³ David Lehr & Paul Ohm, *Playing with the Data: What Legal Scholars Should Learn About Machine Learning*, 51 U.C. DAVIS L. REV. 653, 683-84 (2017).

²⁹⁴ *Id* at 696-97.

genius, makes it reasonable to think that the programmer should be the author of such work.²⁹⁵

However, this might lead to opening up of a Pandora's box with even more complex issues like, when the said programmer dies, the Artificial Intelligence might still go on to create more works and in such a scenario with absence of the developer, who shall be the owner of further computer-generated works? Also, if the Artificial Intelligence works as an employee, will it have rights like contractual rights? (Even if the artificial intelligence was deemed to be an employee one will have to determine whether the work was under a work of hire under the copyright act.)²⁹⁶

B. PUBLIC DOMAIN

One alternative while allocating ownership is to not give it to anyone but to put the work in public domain. It makes sense when one considers that it costs AI virtually nothing to create work. Once AI has been developed to create a particular kind of work, it can create infinite iterations of it without incurring any extra cost or consuming extra resources.

Moreover, AI does not need incentive to create work. The whole purpose of intellectual property law is to incentivize the author to create more work. AI does not require any financial motivation. It does not have any needs. Also, to confer rights to the developer does not make sense since

²⁹⁵ Samantha Fink Hedrick, *I "Think" Therefore I Create: Claiming Copyright in the Outputs of Algorithms*, 8(2) JIPEL 324 (2019).

²⁹⁶ The Indian Copyright Act, No. 14 of 1957, India Code (1957), §17.

the developer did not even envision the final product or assisted the AI in making that product.

But there are issues with putting the AI generated work in public domain. Developers do not have incentives to develop more AI, or improve its capabilities. For people and corporations tend to put a lot of money for development of AI technology, and putting them in public domain fails to encourage them to invest in AI research resulting in decline of AI as well as innovation in technology.²⁹⁷ Thus immediately putting the computer generated work in the public domain is unwanted as it decreases the amount of works entering the public domain hence counter-productive.

It becomes increasingly difficult to attribute a creation to its creator. A person can simply tweak the work created by AI and claim it his own. It is hard to locate the true creator of an art. Apart from dis-incentivizing developers to make AI create more work it would also lead to IP theft, multiple claims of ownership for same work.

Another reason not to adopt this seemingly sensible proposal is that it conflicts with the temper of the times. At the moment, the legislature, the executive branch, and the courts seem to strongly favour maximizing intellectual property rewards, especially for high technology innovators. Perhaps the best reason to allocate ownership interests to someone is that someone must be motivated, if not to create the work, then to bring it into public circulation. If a flawless work has been created by the use of a computer program, and the law deems the work to be not owned by the

²⁹⁷ Kalin Hristov, *Artificial Intelligence and the Copyright Dilemma*, 57 IDEA 431 (2017).

developer because of the lack of a human author, the user who proximately caused its creation has little incentive to go to the trouble of bringing forward what the law says is in the public domain.

The user is more likely to withhold it from the public, or to lie about who created the work, or to make some little change in it (perhaps not an improvement) just to establish a stake in it. Innovations that are kept secret do not promote the progress of science and the useful arts as much as innovations that are revealed and disseminated.²⁹⁸

Thus, it seems the cons outweigh the pros. Putting AI generated work in public domain could hamper future innovation and creativity. It would also lead to dis-incentivizing people to create AI software. Furthermore, it goes against the spirit of capitalism.

VII. CONCLUSION

A dire need exists, to find out the most effective legal manner to protect autonomously developed creations in the international market. More specifically, this controversy has focused on whether these creations should be protected by amending and modifying existing forms of copyright ownership rights or by creating a completely new form of legal legislation. Artificial Intelligence is taking a predominant place in the daily lives of many individuals.

²⁹⁸ D. Ladd, *Donald C. Brace Memorial Lecture*, N. Y. U. L. Ctr. (Apr. 13, 1983).

It is becoming evident that Artificial Intelligence will become even a bigger part of our lives in the foreseeable future. As they take a creative role more and more of intellectual property creations will be accredited to these AI bots. As such the question as to whom should the ownership of this intellectual property be vested with becomes important. The fate of millions of dollars of income in the form of book sales, royalties, art auctions etc. depends on to whom the ownership right goes. Does it go to the developer of Artificial Intelligence application, the Artificial Intelligence itself or into public domain?

Giving it to the developer seems illogical under the current Intellectual Property Regime as giving ownership rights to an entity that did not conceive the idea or actively participate in its creation goes patently against the provisions of the Copyright Law. Although the developer created the software but it does not have control over what the software created.

To give ownership rights to Artificial Intelligence itself is a slippery slope. The rights would be vested in the body incorporated to represent the Artificial Intelligence software. The problem with this approach is that it defeats the purpose of the law. The purpose of Copyright Law is to protect the creator and incentivize them to create more work but Artificial intelligence does not require incentive to create more work. It simply would not remain a level playing field.

To vest the right in no one but rather put the intellectual property in public domain would serve the consumer the best at present stage. The

purpose of law is to protect and incentivize the creator but a creator does not exist in the traditional sense of it. Since AI generated work does not require incentive it makes sense to not give it protection under the law. However, issues exist in this paradigm as well. Putting the work in public domain is not commercially viable as a machine whose work is not saleable would not earn much for the developer of the machine.

The Current field of Artificial Intelligence is at a nascent stage, and the potential for growth is limitless. But what is known for sure is that the Copyright law in its current form is incapable of dealing with work created by Artificial Intelligence. The problem that stems from works created by Artificial Intelligence are many.

Thus it seems that the current Intellectual Property Law can be retained but a new interpretation can be provided which encourages growth in this budding technology and retains its principle that for an intellectual work to exist the closest human agency has to be found or the law could be amended to include artificial as an author like a corporation, to put the ownership rights in.

It is clear that more research is needed in this field to find solutions to this problem to keep pace with the developments in Artificial Technology.