THE RISING MOMENTUM OF ARTIFICIAL INTELLIGENCE AND THE EXISTING DILEMMA WITH INTELLECTUAL PROPERTY LAW

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ABSTRACT

Artificial intelligence has been gaining extensive momentum in the continuously progressing tech savvy world. The increase of usage of artificial intelligence has led to more and more creative works being the result of Artificial Intelligence without human intervention of any kind. This paper addresses the issue of Intellectual Property Ownership of Artificial Intelligence generated works. It argues that giving authorship to Artificial Intelligence creators and owners are crucial to the future progression of the Artificial Intelligence industry. However this challenges not only traditional concepts of patents and copyrights, but also brings to light various questions related to the regulation of such creations amidst others. The paper proposes that instead of redefining “authorship” to include nonhumans, it can simply reinterpret the terms “employee” and “employer” in the work made for hire doctrine of the Indian Copyright Act. This reinterpretation would allow the current Intellectual Property system to continue promoting “the progression of science” without a controversial overhaul of the rules and guidelines currently in place.

Keywords: Artificial Intelligence, Copyright Laws, Patent Laws, authorship, work made for hire.
INTRODUCTION

Since the existence of humankind, innovation and creativity have been drivers of progress. With the rapid development in speed and efficiency of modern computers devices, artificial intelligence has secured a more distinguished position as a driver of innovation. The sudden popularization of artificial intelligence has also made us acknowledge the fact that humans are no more the only source of creativity. Computers with (or even without) human intervention are also able to create innovative works.¹ These computers are also called “creativity machines.”² Sometimes, they are programmed in such a way that they evince learned expertise which their creators do not have. Such works created as a result are a topic of debate, as they fall into a legal grey area of copyrights.³

THE AMBIT OF ARTIFICIAL INTELLIGENCE

Computers, have advanced to such an extent so as to even make decisions on their own. This ability of a computer system to take decisions by itself came to be known as artificial intelligence. The term ‘artificial intelligence’ was formally coined by Mr. John McCarthy, a computer scientist at a conference in 1956.⁴ According to him, it was the notion of a program, processing and acting on information, such that the result is parallel to how an intelligent person would respond in response to similar input.⁵ It was this reliance and curiosity towards machines that AI projects were developed in a manner which allowed for the performance of tasks requiring human-like creativity.

¹ Stephen Thaler, the President and CEO of Imagination Engines Inc., has been credited with the creation of computer programs which generate copyrightable material with and without human assistance. See Tina Hesman, Stephen Thaler’s Computer Creativity Machine Simulates the Human BrAIn, MINDFULLY.ORG (Jan. 24, 2004), http://www.mindfully.org/Technology/2004/Creativity-MachineThaler24jan04.htm
³ The Indian Copyright Act does not directly address the matter of works independently created by computer programs.
⁴ Prof. A.Lakshminath&Dr.MukundSarda, Digital Revolution and Artificial Intelligence- Challenges to Legal Education and Legal Research, CNLU LJ (2) (2011-2012).
THE TURING TEST

However, a question arose as to whether the results being rendered by the machine are an outcome of its own intelligence, or algorithms and commands. To tackle the same, Sir Alan Turing proposed a test called the ‘Turing test’. The test called for the users to converse with a machine/human in a text only format, and then suggest whether they believed they communicated with a human or a machine. As per Turing, an Artificial Intelligence machine showed intelligence if the responses submitted by the same were indistinguishable from real human responses. While this test worked for a couple of years, its application was restricted only to speech machines and certain quizzing purposes. The World Intellectual Property Organization (WIPO) identified the existence of AI and propounded three categories of AI, i.e., expert systems, perception systems, and natural-language systems. Expert systems are the programs that solve problems in specialized fields of knowledge, such as, diagnosing medical conditions, recommending treatment, determining geological conditions, to name a few. These systems are also used for creative purposes such as producing art and other such works. This system gathered legal attention when a computer authored work was denied copyright by the Registrar, on the grounds of indeterminate legal status of works created with the aid of computers. This is an issue that still remains unresolved in many States. Perception systems are the systems that allow a computer to perceive the world with the sense of sight and hearing. This is used by topologists, word context experts, etc. Lastly, a natural language program is meant to understand the meanings of words, requiring a dictionary database. What is noteworthy is, the system takes into consideration different grammatical and textual contexts, to provide a semantic analysis. The use of these Artificial Intelligence systems became so prevalent that, people wanted to procure protection on the outputs.

ARTIFICIAL INTELLIGENCE AS AN INSTRUMENT OF CREATIVITY

Artificial Intelligence is utilized as a tool to help humankind to attain a determined goal or outcome more efficiently. For example, the creation of a piece of music by a musician who has selected

6 Alan Turing, Computing Machinery and Intelligence, 59 MIND 236, 433–60 (1950).
7 A. Johnson-Laird, Neural Networks: The Next Intellectual Property Nightmare?,
the rhythm, the pitch, etc., and to a certain extent has contributed his requirements into the artificial intelligence Programme used to create such work. Even if the musician will not be able to predict the final outcome of the generated music, the creation of such music required their direct contribution and they will be responsible for the final piece generated.

ARTIFICIAL INTELLIGENCE- AN INDEPENDENT ACTOR

This paper mainly deals with the works which are autonomously generated by artificial intelligence machines. Under the US Copyright Laws\textsuperscript{10} the source code accountable for works which are autonomously generated by artificial intelligence is the result of human creativity and may be copyrightable. However, the works generated by such codes are not copyrightable if there has been no direct contribution by human authors. An example can be taken of a weaving process that produces random irregular shapes in the fabric without any observable pattern.” Since it was more of chance that was directly responsible for the resulting patterns, it would not be protected by copyright. Randomness cannot be attributed to the human programmer of an artificial intelligence machine. And so the resulting works are not eligible for protection and fall into the public domain.

THE ISSUE OF ARTIFICIAL INTELLIGENCE AND COPYRIGHT LAWS

Copyright is one of the most important aspects of intellectual property rights. It is a right given to the author of an original piece of work allowing them exclusive rights of usage and distribution. The rationale behind granting such rights to the creator of such works was the idea that the creator is an originator joined with Locke’s economic theory of possessive individualism.\textsuperscript{11} Usually, for granting a copyright, two essential features must be fulfilled. First, the work ought to be in a tangible form, and second, it ought to be original. As artificial intelligence is being used a lot in the creation of literary and artistic works, the study of copyright with respect to such work also becomes relevant.


\textsuperscript{11} Leenheer Zimmerman, It’s an Original!?: In Pursuit of Copyright’s Elusive Essence, 28 COLM. J. L. & ARTS 187, 194 (2005)
There are three landmark US judgements which can be used to understand the ways Courts have previously adjudicated matters pertaining to such issues.

**Burrow Gilles Lithographic Co. v. Sarony**\(^1\)

The central issue in this case was whether copyright protection can be given to a photograph. It focused on the dichotomy between creative and machine-driven labour. The Court, while discussing the possibility of giving copyright to a work which is the output of a device, held that work which emanates purely from a machine is not per se creative, and narrowed the protection available to such works. If a similar strict approach was applied to AI, it would be difficult to grant copyright for such works.

**Bleistein v. Donaldson Lithographing**\(^2\)

In this case the Court distinguished between the work of a human and that of an artificial device. They held that there was no scope for any work to be copyrightable unless there was direct human intervention in the process of creation of such work.

**Alfred Bell & Co. v. Catalda Fine Arts**\(^3\)

This case saw the Court lowering the standard for human creativity and held that for the work to be copyrightable, it must not be the same as any other previous artistic work. This judgment therefore made it easier for people claiming copyrights for artificial intelligence generated work as it wasn’t copied, even if it was being produced through certain programmes and algorithms.

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\(^1\) Burrow Gilles Lithographic Co. v. Sarony, 111 U.S. 53 (1884)
\(^2\) Bleistein v. Donaldson Lithographing, 188 U.S. 239 (1903)
\(^3\) Alfred Bell & Co. v. Catalda Fine Arts, 191 F.2d 99 (2d Cir. 1951)
EXISTING LEGAL FRAMEWORK IN INDIA WITH RESPECT TO ARTIFICIAL INTELLIGENCE

The Courts in India have not yet adjudicated on the legal status of artificial intelligence and thus there exists a lacuna with respect to the work produced by such machines. However, the Ministry of Industry and Commerce in India, recognizing the rising importance of artificial intelligence to the country as a whole and to find solutions to the obstacles and concerns with artificial intelligence based technologies, constituted an 18 member task force, consisting of experts from various fields along with certain important government bodies such as NITI Aayog, Ministry of Electronics and Information Technology, Department of Science & Technology, UIDAI and DRDO in August 2017, titled “Task force on artificial intelligence for India’s Economic Transformation”, to explore the possibilities of the development of artificial intelligence across various fields. The committee had recently published its report,15 which contained recommendations to the Ministry of Commerce with regard to the drafting of a much needed policy on artificial intelligence in India. However, the report did not deal with the issue of copyright with respect to the works of artificial intelligence and focused mostly on development and privacy.

A. Copyright

Similar to various Copyright Laws around the world, even Indian Copyright law requires that for a work to be copyrightable, it would have to firstly satisfy the standard of ‘modicum of creativity’ laid down in “Eastern Book Company and Ors. V. D.B. Modak and anr”.16 In the instant case, the Court held that a work to be qualified for copyright protection must meet a ‘minimal degree of creativity’. The second requirement that is required to be satisfied by the work of the artificial intelligence machine is the requirement to fall under the definition of an ‘author’ as laid in the Copyright Act, 1957. This would be difficult as an artificial intelligence has not been granted legal personality as of now in India.

15 Available at http://dipp.nic.in/sites/default/files/Report_of_Task_Force_ on_ArtificialIntelligence
16 Appeal (civil) 6472 of 2004
Section 2(d) of the Copyright Act of 1957\textsuperscript{17} defines who an author is. There are several issues with respect to the above definition and its impact on Artificial Intelligence. The first one is the use of the terms ‘the person who causes the work to be created’. From the definition it can be understood that the more closely a person is involved in the process of creating such work, the more they are perceived to contribute to it, and the more likely they will be likely to qualify as an individual ‘who causes the work to be created’. As it can be seen, the current legal framework under the Indian Copyright Act, 1957 does not effectively deal with works where the creator is not a human or legal person. Thus, under Indian copyright laws, their authorship would be in question. In other words, unless artificial intelligence works can directly be assigned to an author recognized under the Act, they would not be eligible for copyright protection and would fall into the public domain upon their creation.

B. Patents

Section 6 of the Indian Patents Act, 1970 states that “an application for a patent for any invention can be made only by the true and first inventor of the invention or the persons assigned by such person”.\textsuperscript{18} Whereas, Section 2 (y) of the Act confines the definition of “true and first inventor” to the extent of not including the first importer of an invention into India, or a person to whom an invention is first communicated outside India, and nothing further.\textsuperscript{19} Although these provisions do not expressly restrict the requirement of an inventor to be a natural person, in practice the “true and first inventor” is always assumed to be a natural person. Artificial intelligence will certainly play an important role in the evolution of patent law itself. Sophisticated use of natural language processing has been adopted in generating variants of existing patent claims so as to enlarge the invention’s scope. The publication of these patent claims using such technology would help preclude obvious and easily derived ideas from being patented as they will form the corpus of the prior art that is available in public domain.\textsuperscript{20}

\textsuperscript{17} Section 2(d) ‘author’ means,- “(vi) in relation to any literary, dramatic, musical or artistic work which is computer-generated, the person who causes the work to be created;”
\textsuperscript{18} Section 6 of the Indian Patents Act, 1970
\textsuperscript{19} Section 2(y) of the Indian Patents Act, 1970
DISADVANTAGES OF THE CURRENT STANCE

Without the protection of copyright, there is no more an incentive for makers of artificial intelligence machines to continue to develop their capabilities, if their work in going to be released into the public domain. This is because they would not be granted the benefits of a copyright including the monetary benefits despite having invested considerable money and time into the creation of artificial intelligence machines. This could eventually restrict innovation by deterring developers from investing in artificial intelligence research.

CRITICISM AGAINST GRANTING SUCH PROTECTION

Lovelace is one of the strongest critics against artificial intelligence being granted copyright protection. According to her, due to its behavior which is strictly rule-abiding, the machine does not possess adequate creativity. The reasoning being that, creativity is the capability to produce works which are unpredictable, i.e. like machines. However, sometimes, even authors are called as machines themselves, as they process works which already exist and conclude their works mostly from existing ideas. For instance, there are numerous copyrights on movies based on the concept of ‘Romeo and Juliet’.21

However, the problems with the fact arises that even if copyright laws granted protection to the works of an Ai, who will be the copyright-holder is difficult to decide upon. This is because; the existing legal framework requires a legal personality of a right-bearer, which is not, granted to an Ai, unless the creator of such program is granted the copyright instead.22 However, various problems arise out of the same, with respect to the consequence of the artificial intelligence system being bought, whether the copyright granted to such work will be in favour of the creator or the purchaser. In countries such as England and New Zealand, the copyright is granted to the programmer or the creator of such Ai, through legal fiction. The legal reasoning behind the same is that the definition of copyright must be expanded to include works generated by machines.23

23 Copyright, Designs and Patents Act, § 178, 1988 (UK); Copyright Act, § 2, 1994 (New Zealand).
Another major problem is the nature of criminal liability of artificial intelligence machines. The increasing independence of artificial intelligence draws questions regarding the possibility of holding artificial intelligence criminally liable.\textsuperscript{24} If a similar approach is taken, the creator of such artificial intelligence will be held to be liable, despite it lacking the adequate mens-rea of such act.

**NON HUMANS UNDER THE AMBIT OF AUTHORSHIP**

Since protection under copyright laws only extend to the creators of works, scholars have contended that the term "authorship" should be modified to include under its ambit both human authors and authors who are not human.\textsuperscript{25} Professor Ryan Abbott who is a strong supporter of granting of legal rights to non-human authors, argues that attributing inventor ship and authorship to non-humans is important to inspire more development of Artificial Intelligence.\textsuperscript{26} This could prevent works by artificial intelligence machines alone from being released into the public domain. However artificial intelligence machines are not natural persons and may not be held legally responsible for their actions.\textsuperscript{27} Modifying the definition of authorship to include non-humans would undermine the current legal system, creating more uncertainty.

**SOLUTION TO THE PROBLEM OF NON HUMAN AUTHORSHIP**

The idea of attributing authorship of works generated by non-humans to humans can be traced to the U.K. Copyright Code.\textsuperscript{28} As a way to transfer copyright to a human author the works made for


\textsuperscript{26}Abbott, supra note 20, at 1098–99.

\textsuperscript{27}The legal rights and responsibilities of non-human animals were issues ruled on in both People v. Frazier; and Naruto v. Slater. In both instances, the non-humans involved were deemed to have no legal standing in front of the law, thus being absolved of all legal rights and responsibilities within each case. Naruto v. Slater, 2016 U.S. Dist. Lexis 11041 (N. D. Cal. Jan. 23, 2016); People v. Frazier, 173 Cal. App. 4th 613 (2009)

\textsuperscript{28}The copyright of computer generated works in the U.K. is attributed to “the person by whom the arrangements necessary for the creation of the work are undertaken,” similar to the employer in the U.S. Copyright Act’s made for hire doctrine, who is prescribed authorship under relevant copyright law. Copyright, Designs and Patents Act, 1988, c. 48, § 9(3) (U.K.).
hire doctrine can be amended to include the work of Artificial Intelligence.\textsuperscript{29} The concept of ‘Work for Hire’ though not expressly mentioned under the Indian Copyright Act, under Section 17 (c) of the Indian Copyright Act, 1957\textsuperscript{30} states that employer’s ownership is presumed to be on the work made in the course of the employees’ employment, unless anything contrary is agreed between the two. Having a relative interpretation of the work made for hire doctrine, as opposed to strictly defining them, is one of the best ways to allow the work of artificial intelligence to be transferred to human authors. The works which come under the hire doctrine are of two types of new creations. The first is “work created by an employee during the scope of his or her employment.” The second, “a work specifically ordered or commissioned for use . . . if the parties expressly agree in a written instrument signed by them that the work shall be considered a work made for hire.” In both instances copyright is awarded to an author who was not originally responsible for the creation of such work. This paper contends that the terms “employer” and “employee” ought to be viewed as relative within the scope of the work made for hire doctrine. This broader interpretation would stop works generated by artificial intelligence from falling into the public domain by assigning their copyright to a human author.

ACTORS WHO CAN BE GRANTED COPYRIGHT PROTECTION FOR ARTIFICIAL INTELLIGENCE GENERATED WORK

There exist three important stakeholders which may have a claim to the copyright protection of artificial intelligence generated works:

(1) Artificial intelligence programmers;

(2) Investors in the artificial intelligence sector and

(3) Final Consumers.

The general social benefit must be considered to determine who would be the most appropriate author. To better understand the impact of each party on society, the ultimate goal of attributing

\textsuperscript{29} See generally Annemarie Bridy, Coding Creativity: Copyright and the Artificially Intelligent Author, 2012 STAN. TECH. L. REV. 5, 66–67 (2012).

\textsuperscript{30} Section 17(c) of the Copyright Act
copyright of artificial intelligence generated works to human creators must be determined and
gauge who contributes most to the goal.

The ultimate goal of attributing copyright protection to human authors is to continue to encourage
the development of artificial intelligence. Artificial intelligence machines do not require financial
incentives, unlike human programmers. Their performance is independent of tangible benefits but
depends more on the time and skills invested by programmers and the funding by the companies
for which they work. Without their contribution, artificial intelligence devices would simply not
be available for use by the general public.

Since final consumers have the least contribution to the creation of Artificial Intelligence, their
claims for copyright protection are least convincing. To the contrary, attributing authorship to final
users instead of artificial intelligence programmers could potentially be harmful to the
development of the artificial intelligence field.

MODIFICATION OF WORK MADE FOR HIRE DOCTRINE

In many instances, the creators of works generated by Artificial Intelligence do not always directly
have a hand in these artificial intelligence generated works. A practicable solution to this problem
may be found in the work made for hire doctrine of the Indian Copyright Act. According to the
doctrine, if a work is made for hire, the employer is considered the creator of the work even if the
employee actually created such work. This doctrine could be applied to the artificial intelligence
generated works as well. If the terms “employer” and “employee” are construed as being relative,
the employee–employer relationship may be made applicable to artificial intelligence as well.
Similar to how the term “author” may pertain to various entities such as an individual, a firm or
even an organization, and the term “writings” is an even broader term that could mean books,
music, films, images, and even computer programs, even the terms employer and employee ought
to be left reflect contemporary social changes. Although the current legal definition of employee
may be constrained to “Any person who is employed for hire or reward to do any work, skilled or

31 Section 17(c) of the Copyright Act
32 V.T Thomas & Ors. v. Malayala Manorama Co. Ltd
33 The terms “author” and “writings” have long been understood to have flexible interpretations under the scope of
relevant copyright law.
unskilled, manual or clerical, in a scheduled employment in respect of which minimum rates of wages have been fixed; and includes an out-worker to whom any articles or materials are given out by another person to be made up, cleaned, washed, altered, ornamented, finished, repaired, adapted or otherwise processed for sale for the purposes of the trade or business of that other person where the process is to be carried out either in the home of the out-worker or in some other premises not being premises under the control and management of that other person; and also includes an employee declared to be an employee by the appropriate Government; but does not include any member of the Armed Forces of the Union.”

A more broader definition could be used to fit in the artificial intelligence generated works. A more accommodative interpretation would mean to include an “employer” as an individual who employs the services of another entity in order to attain a particular goal. Thus the creator of an artificial intelligence Programme would fulfil this definition as they employ the services of the artificial intelligence machine in order to produce creative work. This new interpretation of the employer-employee relationship in the work made for hire doctrine would effectively resolve the current problem of works generated by artificial intelligence falling into the public domain. In essence under the provisions of the work made for hire doctrine, the employer is not the actual author of the work, but is only considered as such to satisfy requirements of the law.

IMPACT OF MODIFYING THE DOCTRINE

A. The Legal/Natural Person Problem

By modifying the interpretation of the work made for hire doctrine, a number of problems are avoided. Firstly, copyrights cannot be granted to non-human actors with no legal protection. Thus human programmers and companies can be provided copyright protection as they come under the ambit of natural and legal persons, respectively. This is an essential requirement to grant

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34 Section 2(i) of the Minimum Wages Act, 1948
copyrights. This is clearly illustrated in the case of Naruto v. Slater.\(^{37}\) In 2011, the British wildlife photographer David Slater travelled to Indonesia to take pictures of the local macaques.\(^{38}\) On one of his shoots, he placed his camera on a tripod, and left the remote button accessible to the macaques he was capturing. A female macaque took the opportunity and clicked many photos. The “monkey selfies,” became widely popular around the world. Upon returning home, under the presumption that he owned the copyright of the photos, Slater began licensing them. His claims over the photos were challenged in U.S. court. People for the Ethical Treatment of Animals (PETA) contended that the female macaque who had taken the photographs should be the legal owner of their copyright.\(^{39}\) The Court held that the monkey could not be considered an author under law and thus was not eligible to be copyright-holder even though it was directly responsible for the photographs.\(^{40}\) The judge further stated that since animals do not have a legal personality, it cannot not sue or hold copyrights. The court’s ruling effectively released the photographs in question into the public domain, denying any claims of authorship by either David Slater or the female macaque. In India, although the High Court of Uttarakhand granted legal personality to animals, no other Court has given such wide legal rights to animals since you cannot impose any corresponding legal duty on them.\(^{41}\)

B. Requirement of a Human Author

Under the work made for hire doctrine, authorship would not be granted to the non-human creator of the work (the employee) but, rather, to its human employer, effectively satisfying the human requirement. The proposed reinterpretation of the work made for hire doctrine would ensure that the copyright of all works created by Artificial Intelligence is attributed to a human author, removing the need questioning the legality and practicality of non-human authorship.

\(^{41}\) Animals accorded same rights as humans in Indian state, https://www.telegraph.co.uk/news/2018/07/05/animals-accorded-rights-humans-indian-national-park/
CONCLUSION

The rapid rise in development and dependency on machines has resulted in an increased number of Artificial Intelligence generated works. The outdated nature of the current Indian Copyright Act, however, fails to reflect such a social change, resulting in the release of a large number of Artificial Intelligence generated works into the public domain. This is not beneficial both to the programmers and owners of Artificial Intelligence devices and limits their readiness to invest in the further development of Artificial Intelligence. This lacuna in copyright law has far reaching consequences and may result in a reduced number of valuable new works available to the world, and a significant delay in technological and artistic advancement of modern society. The need for a comprehensive solution to this significant issue is required. The solution must ensure the smooth development of Artificial Intelligence and secure its role as a driver of creativity and innovation.

SUGGESTIONS

This paper suggests the following to help ameliorate the same.

1. A Systematic Recognition of Artificial Intelligence in India.

Despite Artificial Intelligence being a reality around the world, they are mostly only recognized in a select few countries like United States, England and New Zealand.\(^{42}\) A step towards the recognition of Artificial Intelligence and its work could be that, all member countries of multilateral trading forums begin to recognize the importance, in the form of an amendment to TRIPS, for example.

2. Addressing the lacunae in criminal liability of the action of Artificial Intelligence.

Currently, works of Artificial Intelligence are copyrighted by its creator. Thus if any criminal liability is to accrue, it would be attributed to the creator, who might not even know of the action of the Artificial Intelligence let alone be responsible. Such lacuna ought to be fixed, so as to provide a more suitable sanction for the Artificial Intelligence, maybe in form of destruction of the

\(^{42}\) Copyright, Designs and Patents Act, § 178, 1988 (UK); Copyright Act, § 2, 1994 (New Zealand).
machine, or prohibition of the technology from being used further. This would be a huge step to prevent innocent creators from being punished, which would disincentives them from creating further technologies for fear of the punishment.

3. Clearing the Ambiguity with regard to Application of Patent and Copyright laws.

With the advent of Artificial Intelligence machines it is important for legislators to address the question of inclusion of Artificial Intelligence enabled systems under the category of inventor and invention. With the increasing use of these technologies, protection as an issue becomes an important question. Thus by reinterpreting the work made for hiredoctrine, and broadening the scope of employer-employee to include non-human entities, the law would be able to better protect the work of authors and inventors in the future where Artificial Intelligence is going to have a larger significance.