

DISCUSSING IPR ISSUES WHEN AI IS THE AUTHOR: A BIRD'S EYE PERSPECTIVE

Prof. (Dr.) G.B. Reddy, Sai Bhavana Vemuri*

ABSTRACT

The copyright world skipped a beat when copyright over a selfie taken by a monkey was in question.¹ The final settlement however, was extremely disheartening. It did not take long thereafter for the question of patentability of Artificial Intelligence (AI) and machine learning² or the copyrightability of their creations to be discussed.³

This paper addresses the issues relating to AI and Intellectual Property Rights (IPR) in a categorized schematic manner, while also giving a brief introduction into the areas of their fusion. The first part follows with an introduction to artificial learning and AI. It discusses the extent to which these learnings have developed and where the world's knowledge about AI is headed. It could be considered as a primer to the reader's already existing knowledge on AI. This part also talks about various creations of AI which would put their IPR into question.

The second part of this article discusses in particular the copyright influences of AI – comparing its knowledge to that of our existing judicial reviews and research. It

* Dr. Reddy is a Professor of Law in the Faculty of Law, Osmania University, Hyderabad. He has authored two books and eleven articles on different aspects of IPR, his primary area of research focus. He is currently the coordinator of the Osmania University Centre for Intellectual Property Rights and Patent Facilitation Services, in addition to being the CIPAM IPR Chair. He may be contacted at gbredlaw@gmail.com.

Ms. Vemuri is a graduate of DSNLU, Vishakhapatnam, and holds an LL.M in Technology Laws from O.P Jindal University, Haryana. She has worked on various IPR based research projects in association with JIRICO and MHRD IPR Chair-IIT Madras among others. She may be contacted at saibhanav@gmail.com.

¹ Paulina Julia Perkal, *Monkey Business Finally Settled: The 'Monkey Selfie' Disputes*, KLUWER COPYRIGHT BLOG (Feb. 5, 2018), <http://copyrightblog.kluweriplaw.com/2018/02/05/monkey-business-finally-settled-monkey-selfie-disputes/>.

² *EPO Guidelines on Patentability of Artificial Intelligence and Machine Learning*, KLUWER PATENT BLOG (Nov. 8, 2018), <http://patentblog.kluweriplaw.com/2018/11/08/epo-guidelines-on-patentability-of-artificial-intelligence-and-machine-learning/>.

³ Annemarie Bridy, *Coding Creativity: Copyright and the Artificially Intelligent Author*, 28 STAN. TECH. L. REV. 5 (2012).

portrays the easiest possible way ahead for India, learning from the fellow judicial experience, to encourage AI's copyrights. The third part is a similar discussion, but from a Patent perspective. It is an interesting amalgamation of discussions dealing particularly with the global experience concentrating on European and American knowledge. The final part of the article concludes this discussion with key takeaways and globally inclusive steps drawing ideas from various conventions.

*

INTRODUCTION

Indian Cinema was shocked to see Rajinikanth's Robot⁴ wherein a scientist's AI advancement goes rogue and forms his own army to take over the world. A similar hypothetical AI situation including contemporary developments could probably be summed up as follows:

“Alexa and Siri start having spiteful conversations when one day, a little human makes Alexa sing a lullaby for him. Siri, from the other corner of the room, sets itself to sleep only to wake up realizing Alexa has a beautiful voice. They converse through the night when the child is asleep, slowly shedding layers of knowledge that the humans integrated them with. They start with creating their own language,⁵ a non- conclusive set of English words assembled with no known way of reverse engineering it. They go ahead to create their brain child with a genderless voice,⁶ that can now think, create and modify without human intervention. This AI can creep into all the electronic devices around the world and control them. It can listen and respond to human needs including psychological issues,⁷ health care,⁸ negotiations,⁹ translations,¹⁰ controlling drones,¹¹ driving around autonomous

⁴ Lakshmi Subramanian, *Robot + Rajini = 300 Cr*, INDIA TODAY (Oct. 9, 2010), <https://www.indiatoday.in/magazine/nation/story/20101018-robot-rajini-rs-300-cr-744412-2010-10-09;BharatiDubey, Rs 117 Cr in Just 7 Days, 'Robot' Rajini Smashes All Records>, TIMES OF INDIA (Oct. 9, 2010, 3:11 AM), <https://timesofindia.indiatimes.com/india/Rs-117cr-in-just-7-days-Robot-Rajini-smashes-all-records/articleshow/6716660.cms>.

⁵ See Chris Baraniuk, *The 'Creepy Facebook AI' Story That Captivated The Media*, BBC (Aug. 1, 2017), <https://www.bbc.com/news/technology-40790258>; See also, Jordan Novet, *Facebook AI Researcher Slams 'Irresponsible' Reports About Smart Bot Experiment*, CNBC (Aug. 1, 2017, 1:52 PM), <https://www.cnbc.com/2017/08/01/facebook-ai-experiment-did-not-end-because-bots-invented-own-language.html>; See also, Andrew Griffin, *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), <https://www.independent.co.uk/life-style/gadgets-and-tech/news/facebook-artificial-intelligence-ai-chatbot-new-language-research-openai-google-a7869706.html>.

⁶ See Kriti Sharma, *Why I Made a Gender-Neutral AI Assistant*, BBC (June 6, 2018), <https://www.bbc.co.uk/programmes/p069bmh6>.

⁷ Martin Ringle, *Psychological Studies and Artificial Intelligence*, 4(1) AI MAGAZINE 37 (1983), <https://www.aaai.org/ojs/index.php/aimagazine/article/view/387>.

⁸ Fei Jiang et al., *Artificial Intelligence in Healthcare: Past, Present and Future*, 2(4) STROKE AND VASCULAR NEUROLOGY 230 (2017), <https://svn.bmj.com/content/svnbmj/2/4/230.full.pdf>.

⁹ Jeffrey S. Rosenschein & Gilad Zlotkin, *Designing Conventions for Automated Negotiation*, 15(3) AI MAGAZINE 29 (1994), <https://aaai.org/ojs/index.php/aimagazine/article/view/1098>.

¹⁰ Yorick Wilks, *An Artificial Intelligence Approach to Machine Translation*, STANFORD ARTIFICIAL INTELLIGENCE PROJECT, MEMO AIM-161 (1972), <https://apps.dtic.mil/dtic/tr/fulltext/u2/741199.pdf>.

¹¹ Jahanzaib Shabbir & Tarique Anwer, *Artificial Intelligence and its Role in Near Future*, 14(8) JOURNAL OF LATEX FILES 1, (2015) <https://arxiv.org/pdf/1804.01396.pdf>; See also Dario Floreano & Robert J. Wood, *Science Technology and the Future of Small Autonomous Drones*, NATURE (May 27, 2015), <https://www.nature.com/articles/nature14542>.

buses,¹² amongst others. With the already existing AIs making progress into all these fields, it becomes so much easier for all those to be incorporated into one AI, only with the added knowledge of human functions and emotions. It develops into the amalgamation of various high functioning humans, not only taking orders to respond to, but also making choices of its own and performing functions it pleases – not limiting itself to work but also being the alpha player and winning games.”¹³

Though the above illustration seems positive, the negative effects of AI don't seem to take long before catching up. Dissecting the various AI learnings from this illustration shows us the most recent developments in the AI industry.

The past few decades have seen a rise in self-sufficient AI innovations. They have learnt to interpret and understand human interactions and respond with reason or incentive. Various known multinational companies have included themselves as active participants in AI research. Facebook AI Research (FAIR) was engaged in creating a negotiating AI which was claimed to be shut down because they created a language that only they knew.¹⁴ IBM created a chess playing AI based company, Deep Blue, which defeated the world champion Garry Kasparov.¹⁵ Google's smart engine LinkedIn, personalizes gains from across the globe giving the user the best of what is necessary.¹⁶ Likewise, social media sites are also using AI to build and recognize patterns that can help combat fake news. Google had also launched a global advisory council to advice on research related to facial recognition software.¹⁷

¹² Vikram, *Haidian Park: Know about 'World's First' AI Park*, MOBILE APP DAILY (Mar. 23, 2020), <https://www.mobileappdaily.com/worlds-first-ai-park>.

¹³ Roman Kucera, *Truth Behind Facebook AI Inventing a New Language*, TOWARDS DATA SCIENCE (Aug. 7, 2017), <https://towardsdatascience.com/the-truth-behind-facebook-ai-inventing-a-new-language-37c5d680e5a7>.

¹⁴ Andrew Griffin, *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), <https://www.independent.co.uk/life-style/gadgets-and-tech/news/facebook-artificial-intelligence-ai-chatbot-new-language-research-openai-google-a7869706.html>.

¹⁵ See, Jennifer Latson, *Did Deep Blue Beat Kasparov Because of a System Glitch?*, TIME (Feb. 17, 2015), <https://time.com/3705316/deep-blue-kasparov/>.

¹⁶ *Using AI in the world of News*, FINANCIAL EXPRESS (Sept. 21, 2018, 12:16 AM), <https://www.financialexpress.com/industry/technology/using-ai-in-the-world-of-news/1320901/>.

¹⁷ Paresh Dave, *Google Launches Global Council to advise on AI and Tech Ethics*, REUTERS, Mar. 27, 2019, <https://www.reuters.com/article/us-alphabet-google-ai/google-launches-global-council-to-advise-on-ai-and-tech-ethics-idUSKCN1R72DM>.

AI powered voice-based shopping in vernacular languages has been enabling customers a smoother transition from offline to online.¹⁸ Neural networks is a relatively newer development in AI, where algorithms are used to design machine learning systems. These designs are processed automatically which makes it more accurate and efficient than the results of their human counterparts. However, this Neural Architecture Search (NAS) technique is extremely expensive because of its computational complications. For example, Google recently developed one such NAS algorithm to run on a squad of Graphical Processing Units (GPUs), which took a reported 48,000 hours to produce a single convolutional neural network. The impossibility of such effort for many other companies or individuals is evident and proves the wherewithal that Google possesses to finish such a gargantuan task.¹⁹

The United States Military recently employed Uptake Technology for its AI enabled machine learning software that can track, identify and repair machines that are being used.²⁰ In other news, three institutions that are pioneers in AI research – MIT, IBM Watson AI Lab, and DeepMind, have concluded that their hybrid model is able to learn object related concepts (for example, color and shape) and leverage it to interpret complex relationships in a scenario.²¹ Vrije Universiteit Brussel built robots that can heal themselves.²² The Nanyang Technological University, Singapore, created a robot that can assemble IKEA chairs.²³ Amongst these educational institutions, the importance of Santa Clara AI Conference is acclaimed for its interactive sessions which encourages conversation about AI issues between industry experts and thought leaders. In its 3rd conference, AI was accepted to be a key component for the functioning of various MNCs, including Amazon (represented by Paul

¹⁸ *E-commerce firms focusing on AI, virtual reality to cut logistics cost and fraudulent orders*, LIVE MINT (June 25, 2018, 3:10 PM), <https://www.livemint.com/AI/7aCVPiWq0ovp7IQ00St05L/Ecommerce-firms-focusing-on-AI-virtual-reality-to-cut-logi.html>.

¹⁹ Rob Matheson, *Kicking Neural Network Design Automation Into High Gear*, MIT NEWS (Mar. 21, 2019), <http://news.mit.edu/2019/convolutional-neural-network-automation-0321>.

²⁰ Sonja Jordan, *Army Investing in Predictive Maintenance for Bradleys*, NATIONAL DEFENCE MAGAZINE, (Sept. 26, 2018), <https://www.nationaldefensemagazine.org/articles/2018/9/26/army-investing-in-predictive-maintenance-for-bradleys>.

²¹ Kim Martineau, *Teaching Machines to Reason About What They See*, MIT NEWS (Apr. 2, 2019), <http://news.mit.edu/2019/teaching-machines-to-reason-about-what-they-see-0402>.

²² Andy Sanchez, *VUB Researchers Create Self-Healing Robots*, THE BRUSSELS TIMES (Aug. 17, 2017), <https://www.brusselstimes.com/all-news/belgium-all-news/science/43696/brussels-u-researchers-create-self-healing-robots/>.

²³ Vikram, *A Robot Does the Ikea Chair for You: Beyond the Benchmark*, MOBILE APP DAILY (Mar. 17, 2020), <https://www.mobileappdaily.com/2018/04/19/robot-does-the-ikea-chair-for-you>.

Misener, Vice-President), Google (represented by Ron Bodkin, Director of Engineering), and Walmart (represented by Vilas Veeraraghavan, Director).²⁴ Kebox is another notable invention that uses AI and robotics for building new materials. It was created by Harvard scientists in order to promote the future of new materials discovery, by committing for a speed-up discovery and exploration which also includes the production of more materials including molecules.²⁵ Wipro has partnered with IIT Kharagpur on applied AI research projects in the healthcare, education and retail sectors as well as climate change and cybersecurity.²⁶

A contemporary experiment with AI DABUS showed that the AI's paintings have a lot of stimulation as a result of changes in sounds around it, the visuals of its ongoing painting, or even keywords that it autonomously chooses.²⁷ Recently, Dr. Stephen Thaler has applied for two patents naming DABUS as the creator. One of the applications is for a food container which can help in transporting several vessels at once by fitting them tightly together. This design is extremely fractal, which is of assistance if robots had to pick or grip these containers.²⁸ The second application is for devices and methods for attracting enhanced attention.²⁹ However, the European Patent Office rejected these applications stating that designation of inventorship as mentioned under Art 81, Rule 19, Para 1, of the European

²⁴ Vikram, *Global Artificial Intelligence Conference: Everything you want to Know*, MOBILE APP DAILY (Mar. 13, 2020), <https://www.mobileappdaily.com/global-artificial-intelligence-conference>.

²⁵ Dennis Sheberla, *Harvard Scientists Launch Kebox, a Breakthrough AI and Robotics Tech Company for Rapid Innovation of Materials*, KEBOTIX (Nov. 7, 2018), <https://www.kebotix.com/press/2018/11/7/harvard-scientists-launch-breakthrough-ai-and-robotics-tech-company-for-rapid-innovation-of-materials>.

²⁶ *Wipro Joins hands with IIT Kharagpur for Research on 5G and AI*, ECONOMIC TIMES (Mar. 28, 2019), <https://tech.economictimes.indiatimes.com/news/technology/wipro-joins-hands-with-iit-kharagpur-for-research-on-5g-ai/68617142>; See also, Ministry of Electronics & Informational Technology, *Report of Committee – B on Leveraging A.I. For Identifying National Missions in Key Sectors* (July, 2019), https://meity.gov.in/writereaddata/files/Committee_B-Report-on-Key-Sector.pdf.

²⁷ Ana Romalho, *Will Robots Rule the (Artistic) World? A Proposed Model for the Legal Status of Creations by Artificial Intelligence Systems*, 21(1) J. OF INTERNET L. 12 (2017).

²⁸ Leo Kelion, *AI System 'Should be Recognised as Inventor'*, BBC (Aug. 1, 2019), <https://www.bbc.com/news/technology-49191645>.

²⁹ James Nurton, *EPO and UKIPO Refuse AI-Invented Patent Applications*, IP WATCHDOG (Jan. 7, 2020), <https://www.ipwatchdog.com/2020/01/07/epo-ukipo-refuse-ai-invented-patent-applications/id=117648/>.

Patent Convention is specific about a 'human' creator.³⁰ Understanding these numerous AI developments is essential to reason the necessity for development in the IPR front.

Internationally, the conclusion and entering into force of the agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) has revolutionized the IPR protection at an intergovernmental level.³¹ It aimed at ensuring that effective protection of IPR will promote international trade with the added benefit of transfer of technology for socio-economic upliftment by balancing rights and duties. TRIPS also ensured that its signatory 164 member states³² complied with the Paris Convention, Berne convention, and the Rome treaty, thereby swelling the memberships of these other conventions.³³ One significant development in the Berne convention is its requirement to make all the signatory countries provide the same level of copyright protection to nationals of other parties to the convention i.e. the principle of national treatment, which is also a part of the TRIPS.³⁴

The World Intellectual Property Organization (WIPO) considered the possibility to protect computer-produced works in a model copyright law. The works generated by computers where identification of authors is impossible because of the indirect nature of individual contributors were considered to be a part of computer-produced works. There was a lot of debate over this model of protection for computer-produced works, which pleaded for further study, so the WIPO committee experts concluded this model and it was never adopted.³⁵

³⁰ Giangiacomo Olivi, *The DABUS Case: Two Patent Applications Designating an AI Based Machine as the Inventor Refused by the EPO*, DENTONS (Mar. 27, 2020), <https://www.dentons.com/en/insights/articles/2020/march/27/the-dabus-case>.

³¹ Fernando Piera, *IPR Protection of Computer Programs and Computer Software in the Global Market*, 15 INT. TRADE L. J. 15 (2003).

³² WTO member states are all members to TRIPS, and in 2016, two new states – Liberia and Afghanistan became members of WTO making it 164 members and 23 observer governments.

³³ Alan Dunlop, *Conventional TRIPS*, 2 J. BUS. L. 137 (1994).

³⁴ Edward J. Ellis, *National Treatment under the Berne Convention and the Doctrine of Forum Non Conveniens*, 36(2) IDEA: J. L. & TECH 327 (1995).

³⁵ Ryan Abott, *Artificial Intelligence, Big Data and Intellectual Property: Protecting Computer-Generated Works in the United Kingdom*, in RESEARCH HANDBOOK ON INTELLECTUAL PROPERTY AND DIGITAL TECHNOLOGIES 322 (Tanya Aplin ed., 2017).

I. A DIVE INTO COPYRIGHT LAW, WITH AI ON OUR MINDS.

The United States Copyright Act provides that “Copyright protection subsists, in accordance with this title, in original works of authorship fixed in any tangible medium of expression.”³⁶ The Supreme Court’s formulation is that “to qualify for copyright protection, a work must be original to the author” and possess “at least some minimal degree of creativity.”³⁷ Essentially, the look out is for originality. Hence, if an AI system’s output is to be protected, the formal approach to originality is to be preferred over the subjective approach.³⁸ Tangibility is the second essential, which is generally fulfilled by AI because it is not just an idea but presented on a fixed medium. Minimal degree of creativity is the final essential which is left to interpretation and circumstances. The *Feist*³⁹ judgment strengthened the creativity requirement by adding value to the effort and not to the end result. The judgment stated that a telephone record cannot be considered novel despite its arrangement because it lacks creativity. In such a situation, the works of AI would result in questionable outcomes and it would have to be left to the particular creation to assess its creativity ergo protection.

Therefore, basing US law on the undefined creativity concept may lead to also assuring a future where AI which develops an autonomous algorithm by itself and uses that to create a painting could be called the author of such creative work. Thus, depending on how creativity is judged, it can be considered to be in the purview of a coded algorithm. The case of *Naruto v. Slater*,⁴⁰ however, proved otherwise, where the Court repeatedly referred to authorship only if the creator is a person or human being. The United States Patent & Trademark office also adheres to this rule and has a policy prohibiting protection for non-human work which is lately referred to as “human authorship requirement”⁴¹.

³⁶ 17 U.S.C. § 102 (1990).

³⁷ Shlomit Yanisky-Ravid, *Generating Rembrandt: Artificial Intelligence, Copyright, and Accountability in the 3A Era: The Human-Like Authors Are Already Here: A New Model*, MICH. ST. L. REV. 659 (2017).

³⁸ *Id.* at 721.

³⁹ *Feist Publications Inc. v. Rural Telephone Service Co.*, 499 U.S. 340, 345 (1991).

⁴⁰ *Naruto v. Slater*, 888 F.3d 418 (9th Cir. 2018).

⁴¹ See, Andres Guadamuz, *The Rise of Machines is Here, but They do Not Come as Conquerors, They Come as Creators*, WIPO MAGAZINE, Oct. 2017, https://www.wipo.int/wipo_magazine/en/2017/05/article_0003.html.

The European Union on the other hand, provides a definition to authorship in the Software Directive, the Database Directive and the Rental and Lending Rights Directive.⁴² The Proposal for a Software Directive comprised a provision on computer generated works that never made it to the final draft, where it was stated that “a human ‘author’ in the widest sense is always present.” The Explanatory Memorandum to the Proposal for a Database Directive clarifies that it intended to restate the “fundamental principle of the Berne Convention [...] that the human author who creates the work is the first owner of the rights in that work.”⁴³

The EU currently encourages protection to artistic works under certain restrictions which include a standard of originality for the works. As laid down in the famous *Football Dataco*⁴⁴ case, the work has to be an authors’ original creative work. So, an undefined standard of creativity has to be met, in order to be able to gain protection in the EU.⁴⁵ Creativity is supposed to encompass the elements of novelty and appropriateness.⁴⁶ This can be considered as one of the biggest hindrances to AI’s creativity being protected. If it is fed in by a human, then the element of novelty is lost and on the other hand, if it is created by an AI, the possibility of rejection because of being non-appropriate is immense owing to a lack of heuristic process in achieving it, amongst others. One of the most recent developments for IP law in the EU is the European Parliament’s Resolution of Feb. 16, 2017, which identified the ability to self-learn from experience and interaction as an optional criterion for the definition of smart robot.⁴⁷

To put things in perspective, the EU and US have two common grounds:

Firstly, they consider the author to be a human being or a person, who is the subject of such rights. *Secondly*, these countries also intertwine authorship with copyright protection requirements. As a result, it would always seem like authorship is embedded in copyright law. The only possibility from this outcome, would be to consider AI as creator under the

⁴² Debra B. Rosler, *The European Union’s Proposed Directive for the Legal Protection of Databases: A New Threat to the Free Flow of Information*, 10(1) HI. TECH. L. J. 105 (1995).

⁴³ Ana Ramalho, *Ex Machina, Ex Auctore? Machines That Create and How EU Copyright Law Views Them*, KLUWER COPYRIGHT BLOG (Nov. 12, 2018), <http://copyrightblog.kluweriplaw.com/2018/11/12/ex-machina-ex-auctore-machines-that-create-and-how-eu-copyright-law-views-them/>.

⁴⁴ Estelle Derclaye, *Football Dataco: Skill and Labour is Dead!*, KLUWER COPYRIGHT BLOG (Mar. 1, 2012), <http://copyrightblog.kluweriplaw.com/2012/03/01/football-dataco-skill-and-labour-is-dead/>.

⁴⁵ William W. Fisher III, *Regulating Innovation*, 82(1) UNIV. CHICAGO L. REV. 251 (2017).

⁴⁶ Ramalho, *supra* note 43.

⁴⁷ Ana Romalho, *Will Robots Rule the (Artistic) World? A Proposed Model for the Legal Status of Creations by Artificial Intelligence Systems*, 21(1) J. OF INTERNET L. 12 (2017).

copyright framework. It would still be tough to have legal protection for AI's work. Consider a situation where a computer program is used as a means to produce a work, the creativity flows from the user thereby giving him the legal rights. Similarly, even if information generated by the AI is higher than the input from the user (either click of a button or moving a cursor), the programmer is given the rights rather than the AI. The complexity here is due to the interconnection between the amount of creativity between the human user or the programmer and the AI, which not only is inseparable but is also not easy to evaluate. The contribution of AIs creativity to the output has been ignored thus far, but the question remains, when and what extent of such contribution by AI would make them creators of IP?

PATENT LAW AND AI

The US patent law is codified under the Title 35 of the United States Code which protects inventions which are new, involve an inventive step and can be applied industrially. The US Constitution authorizes Congress with the power to create Patent laws. In order to adapt to TRIPS standards, US initially revised its patent law and introduced "Provisional Patent Application" to establish a national priority system.⁴⁸

The US patent law does not define an inventor but suggests that only a human being can be named as an inventor. This creates a "personal property" right which can be assigned to non-natural entities. The definition of non-obviousness explained by the court considers four factors:

1. Scope and content of prior art,
2. Difference between prior art and claims of invention,
3. The level of ordinary skill or practitioners in the art, and
4. The relevant secondary considerations.

Thus, it earns the notorious "mental part of the inventive act" status.⁴⁹

The European Patent Convention (EPC) which is a multilateral treaty creating European Patent Organization (EPO), grants patents only if the identity of inventors is disclosed in patent applications. If considered, an EPO granted patent may be nationally granted in any of the 38 EPO countries. Furthermore, the EPO has issued guidelines which state that

⁴⁸ Piera, *supra* note 31.

⁴⁹ Russ Pearlman, *Recognizing Artificial Intelligence (AI) as Authors and Investors under U.S. Intellectual Property Law*, 24(2) RICH. J. L. & TECH. 1 (2018).

machine learning would be considered as a form of mathematical method. These are defined by Art 52(2) of the EPC as non-inventions so they are inherently un-patentable.⁵⁰

The first question that haunts us with respect to patentability of computer-generated works is the justification for a natural person to claim inventor-ship because of their involvement in the development of the computer rather than in the patentable final work. And yet, this is the position of law in every country because of the non-recognition of the status of person to computer *ipso facto*. To put things in perspective, the United States recognizes that an inventive subject matter may qualify as inventor-ship merely because of the person's involvement in the recognition of the subject matter or the relevance of the machine's output. There is a possibility of significant skill influencing the ease of identification of this inventive output but that is rather rare as compared to obvious patentable outputs. This leaves us with another significant question, the possibility of a computer recognizing its own patentable output and the implications of that scenario. This exact situation was answered by EPO while refusing the DABUS patent applications by stating that the inventor is not a human being who can benefit from the rights linked to the status.⁵¹

However, the implications of protecting computer generated works must also be considered keeping in mind how the EPO has turned a blind eye towards incredible development in the field of AI and the possibility of a future inclusion. So, if they are protected, will there be a percentage of protection to the developer of the computer or identifier of the patentable outcome? This would be an answerable scenario with respect to economic rights but the repercussions on moral rights basis can be immense.

Currently, *de jure* or *de facto* individuals claim inventor-ship of computer-generated works in case they don't function as inventors. The argument claiming it as an unfair practice which weakens moral justifications for patents by giving credit to the undeserved, is too close to reality to be ignored. Acknowledging computers as inventors would also acknowledge the work of computer programmers. On the other hand, arguments about computers holding IP rights and transferring them under a contract are backed by aces like Colin Davies.⁵² Between

⁵⁰ Sam Jones, *Patentability of AI and Machine Learning at the EPO*, KLUWER PATENT BLOG (Dec. 21, 2018), <http://patentblog.kluweriplaw.com/2018/12/21/patentability-of-ai-and-machine-learning-at-the-epo/>.

⁵¹ *EPO Publishes Grounds for Its Decision to Refuse Two Patent Applications Naming a Machine as Inventor*, EUROPEAN PATENT OFFICE (Jan. 28, 2020), <https://www.epo.org/news-issues/news/2020/20200128.html>.

⁵² Kalin Hristov, *Artificial Intelligence and the Copyright Dilemma*, 57 IDEA 431, 441 (2017).

the computer's user, programmer or owner, the rights to a patent might rest in various combinations. Hence, a considerable, implementable, and practical policy will be to give ownership to a party that makes the most effective economic outcome out of the ownership that is vested in them.

Alternatively, a new Work Made for Hire (WMFH) model could be used where AI can be authenticated as a creative employee or self-contractor creator. This would maintain the AIs creativity, independence and intelligence while also ensuring that the employer or user maintain the appropriate rights and duties.⁵³ Accountability would ensure that the employer has a keen interest in the developments by AI, while creative independence would bring out monumental results from the AI.

CONCLUSION

The prospect of Alexa working with Siri, seems extremely farfetched to see the light of the day, but there is a possibility of such repercussions to follow with different AI systems. Given the most recent developments in AI and the pace at which it can grow, it might not be long before disasters are reported. Similarly, on the IP front, WIPO initiated an international discussion on the application of AI in IP administration in 2018. Currently, the focus is on analyzing if the rewards to AI is as important as protecting the data they create. So, depending on the choice, AI could receive no reward in the form of recognition of its work but the data they create is protected or allowed for free use. Further, a WMFH model could be developed where AI could be authenticated as a creative employee and maintain its independence in creations.

Presently, the conventional protection of IP is not equipped to deal with IPR created by AI. None of the international conventions and treaties could address it effectively but developed countries have taken a few initiatives which are primarily aimed at protecting the AI but not the IPR they create. The potential areas of creation of IP through AI remain copyright, patent, designs, including layout designs - topographies. The specific areas where IP can be created by AI include the databases used for medical analytics, particularly diagnostics as developed in the US. Jurisprudentially speaking, the recognition of non-human beings

⁵³ Yanisky-Ravid, *supra* note 37.

including animals and computers as legal persons capable of rights and duties appears to be the solution to granting rights for the AI's creations.

For this, the international as well as national legal regimes need to undergo a major transformation. If the chimeras⁵⁴ are already recognized as subject matter of IPR protection,⁵⁵ the recognition of AI's creations would be the next logical step.

Indian Patent law substantiates the US law by recognizing and protecting the innovative works but insists on recognition of true and first inventor to be a human being. If AI is recognized as a proprietor of IP in the absence of independent neural analysis, the enforcement of the rights would be extremely difficult.

**

⁵⁴ An organism made of two sets of DNA from two or more individuals.

⁵⁵ Maureen O'Sullivan, *The Legal Lacunae of Human-Animal Hybrids and Chimeras Within Patent Law*, 8(1) J. OF ANIMAL ETHICS, 62 (2018).