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Patentability of AI-Generated Inventions: Rethinking Inventorship in Indian Patent Law

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ABSTRACT

The rapid advancement of Artificial Intelligence (AI) technologies has redefined the boundaries of innovation, with machines now capable of autonomously generating novel solutions, designs, and inventions. However, this unprecedented capability has posed significant challenges to traditional patent systems, which are primarily designed to recognize human inventorship. Indian patent law, like many global frameworks, mandates that an "inventor" must be a natural person. This requirement creates a legal vacuum for AI-generated inventions, as such outputs fall outside the scope of current inventorship definitions under the Patents Act, 1970.

This paper explores the conceptual and legal complexities surrounding the patentability of AI-generated inventions in India. It examines whether the Indian legal framework is equipped to address this emerging reality, focusing on the statutory language, judicial interpretation, and the role of the Indian Patent Office. Through comparative analysis of global developments including the DABUS case and the varied international stances on machine inventorship this research highlights the growing tension between technological innovation and outdated legal norms.

The paper further delves into philosophical and jurisprudential arguments about authorship, ownership, and the nature of legal personality in the context of AI. Finally, it proposes a roadmap for reform, including potential legislative amendments and administrative guidelines that India could adopt to accommodate the changing innovation landscape. The goal is to ensure that the Indian patent regime remains robust, inclusive, and responsive to technological evolution without compromising legal certainty or ethical responsibility.

I. INTRODUCTION

In recent years, Artificial Intelligence (AI) has shifted from being a tool of convenience to a force capable of creative and autonomous problem-solving. AI systems today are not just assisting inventors in research and development; in some instances, they are independently

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generating novel ideas, compositions, and designs without direct human input.[2] This growing phenomenon has raised fundamental questions about the adaptability of traditional legal frameworks, particularly intellectual property regimes that were structured with human inventorship in mind.[3]

Patent law, both in India and internationally, is grounded in the assumption that inventions arise from the intellect of a human being.[4] The Indian Patents Act, 1970 requires the disclosure of a "true and first inventor," who must be a natural person.[5] This human-centric understanding of inventorship is being increasingly tested by technologies that can produce outputs that qualify as patentable subject matter under the existing criteria of novelty, inventive step, and industrial applicability.[6] However, since these inventions originate from AI systems, lacking legal personality or human attributes they do not fit neatly within the statutory requirements of inventorship, thereby creating a legal and ethical conundrum.[7]

One of the most prominent examples of this tension is the global debate surrounding the DABUS (Device for the Autonomous Bootstrapping of Unified Sentience) AI system, which has generated inventions independently.[8] Applications naming DABUS as the inventor were filed in several jurisdictions, including the United States, United Kingdom, Europe, South Africa, and Australia.[9] While some patent offices and courts, such as those in the UK and US, rejected the applications on the ground that an inventor must be a human being,[10] others like South Africa accepted them, sparking renewed debate on whether patent laws need to evolve to account for machine-generated innovation.[11]

In the Indian context, this issue remains relatively unexplored in terms of legislation and case law, yet it is rapidly becoming unavoidable.[12] As Indian startups, research institutions, and corporations increasingly integrate AI into their innovation pipelines, the question of who, or

[2] Ryan Abbott, The Reasonable Robot: Artificial Intelligence and the Law of Torts 27–30 (2020).
[3] WIPO, *WIPO Technology Trends 2019: Artificial Intelligence*, https://www.wipo.int/edocs/pubdocs/en/wipo_pub_1055.pdf.
[4] Srividhya Ragavan & Feroz Ali, *Standard of Inventorship in Indian Patent Law: AI's Imminent Challenge*, 13 NUJS L. Rev. 1, 5 (2020).
[5] The Patents Act, No. 39 of 1970, § 6, India Code (1970)
[6] Ibid. §§ 2(1)(j), 2(1)(ja), 2(1)(ac).
[7] Abhilasha Nautiyal, *Can Artificial Intelligence be an Inventor? An Indian Perspective*, SpicyIP (June 2, 2021), https://spicyip.com/2021/06/can-artificial-intelligence-be-an-inventor-an-indian-perspective.html.
[8] Stephen L. Thaler, *DABUS: The Artificial Inventor*, https://artificialinventor.com/dabus.
[9] WIPO, *Artificial Intelligence and IP Policy*, https://www.wipo.int/about-ip/en/artificial_intelligence/.
[10] United States Patent and Trademark Office, Decision on Petition, Application No. 16/524,350 (Apr. 27, 2020); Thaler v. Comptroller General of Patents [2021] EWCA Civ 1374.
[11] South African Companies and Intellectual Property Commission, Patent No. 2021/03242, July 28, 2021.
[12] N.S. Gopalakrishnan & T.G. Agitha, *AI-Generated Inventions and Indian Patent Law: Time for a Revisit*, 62 JILI 243, 245 (2020).

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what can be recognized as the inventor in a patent application will gain practical urgency.[13] The Indian Patent Office has yet to articulate a formal position on AI-generated inventions, although the existing legal provisions suggest a rigid adherence to human inventorship.[14]

This paper seeks to explore whether Indian patent law, in its current form, is equipped to address the emerging challenges posed by AI-generated inventions. It examines the definitions, statutory requirements, and interpretative gaps within the Patents Act, 1970, and compares India's legal position with evolving international practices.[15] It also delves into the philosophical and jurisprudential underpinnings of inventorship, ownership, and legal personality, questioning whether new models of recognition, such as attributing inventorship to the AI's developer, user, or owner could provide workable solutions.[16]

The central research questions this paper aims to address are:

1. Can an invention generated autonomously by an AI system be patented under Indian law?
2. Is there a need to redefine or expand the concept of "inventor" within the Indian patent regime to accommodate non-human entities?
3. What legal, ethical, and practical implications would such a shift entail?

The study adopts a doctrinal and comparative approach, supported by real-world case studies and theoretical analysis. Ultimately, it proposes recommendations for policy reform that would enable Indian patent law to remain relevant in an era where machines can create, and where innovation increasingly transcends the human mind.[17]

II. UNDERSTANDING AI AND THE INNOVATION PROCESS

Artificial Intelligence (AI) is no longer a futuristic concept confined to science fiction. It is a present-day reality that is deeply embedded in various domains such as healthcare, finance, education, agriculture, and most notably, research and development.[18] Broadly speaking, AI refers to the ability of machines or software to simulate human intelligence, including

[13] Ministry of Electronics & Information Technology, *National Strategy for Artificial Intelligence* (2018), https://indiaai.gov.in/research-reports/national-strategy-for-artificial-intelligence.
[14] Indian Patent Office, *Manual of Patent Office Practice and Procedure*, 3rd ed., 2019.
[15] European Patent Office, *Legal and Practical Aspects of Artificial Intelligence in the Patent System*, https://www.epo.org/news-events/in-focus/2021/artificial-intelligence.html.
[16] Peter Yu, *Inventing Around AI: Rethinking the Human Requirement in Patent Law*, 72 Fla. L. Rev. 1, 12–15 (2020).
[17] World Intellectual Property Organization, *Revised Issues Paper on Intellectual Property Policy and Artificial Intelligence*, WIPO Doc. WIPO/IP/AI/GE/20/1 REV. (May 21, 2020), https://www.wipo.int/edocs/mdocs/en/wipo_ip_ai_ge_20/wipo_ip_ai_ge_20_1_rev.pdf.
[18] World Economic Forum, *Harnessing Artificial Intelligence for the Earth* (2018), https://www3.weforum.org/docs/Harnessing_Artificial_Intelligence_for_the_Earth_report_2018.pdf.

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learning, reasoning, and problem-solving.[19] With the rise of advanced machine learning algorithms, neural networks, and natural language processing tools, AI systems can now perform complex tasks that once required human cognition.[20]

AI can be classified into different categories based on its capabilities: **narrow AI**, which performs specific tasks (like language translation or facial recognition); **general AI**, which aims to mimic human reasoning across multiple functions; and **generative AI**, which can create new content, including music, art, code, and even inventions.[21] It is this last category, generative or autonomous AI, that has disrupted traditional notions of innovation, particularly in the field of intellectual property.[22]

The innovation process, traditionally understood, involves human beings who use their intellect and creativity to develop new products, processes, or solutions. This process includes identifying a problem, conceptualizing a solution, developing a prototype, and refining the invention based on testing and feedback.[23] Patent law is structured around this linear process, recognizing the individual or group that performs these tasks as the "inventor." However, AI complicates this model. In certain cases, AI systems are no longer just assisting humans but are independently analysing data, recognizing patterns, and proposing innovative solutions without direct human intervention.[24]

Consider the example of **DABUS** (Device for the Autonomous Bootstrapping of Unified Sentience), an AI system developed by Dr. Stephen Thaler.[25] DABUS was designed to simulate human brainstorming and was able to autonomously generate two distinct inventions, a food container with improved grip and a device for attracting attention during emergencies.[26] These inventions were not the result of a human programmer inputting specific instructions or concepts. Rather, they were outputs of DABUS's autonomous processes. Such cases challenge the assumption that only human beings are capable of creating something new and useful, a core criterion for patentability.[27]

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[19] John McCarthy et al., *A Proposal for the Dartmouth Summer Research Project on Artificial Intelligence* (1955), http://jmc.stanford.edu/articles/dartmouth/dartmouth.pdf.
[20] Stuart Russell & Peter Norvig, *Artificial Intelligence: A Modern Approach* 19–21 (4th ed. 2020).
[21] OECD, *The OECD AI Principles* (2019), https://oecd.ai/en/ai-principles.
[22] Ryan Abbott, *The Artificial Inventor Project*, https://artificialinventor.com/.
[23] WIPO, *Technology Trends 2019: Artificial Intelligence* 9–12, https://www.wipo.int/edocs/pubdocs/en/wipo_pub_1055.pdf.
[24] Surabhi Sharma, *AI in Innovation: Time to Rethink Inventorship Under Patent Law?*, 25 J. Intell. Prop. Rts. 321, 322 (2020).
[25] Stephen Thaler, *DABUS*, https://artificialinventor.com/dabus/.
[26] Ibid.
[27] European Patent Office, *Press Release on DABUS Applications*, https://www.epo.org/news-events/news/2020/20201221.html.

Another example lies in pharmaceutical research, where AI systems like DeepMind's **AlphaFold** have revolutionized the prediction of protein structures, a task that is crucial to drug discovery and has traditionally required years of research.[28] AlphaFold's predictive models have accelerated innovation in ways that human scientists alone could not achieve within the same timeframe. While these systems are often supervised or directed by human researchers, the extent of their contribution raises important questions about the boundary between assistance and authorship.[29]

To better understand the AI-driven innovation process, it is essential to distinguish between AI-assisted and AI-generated inventions. In the former, human inventors use AI tools as aids in data analysis or ideation. The inventive step is still attributable to a human mind. In the latter, AI systems generate outputs with minimal or no human input, making it difficult to identify a human who can be legally recognized as the "true and first inventor."[30]

This evolving landscape underscores the inadequacy of traditional legal definitions when applied to AI-generated outputs. As AI systems become more capable, the line between tool and creator continues to blur. Recognizing and adapting to this shift is vital for ensuring that intellectual property regimes remain relevant, fair, and conducive to innovation in the digital age.[31]

III. PATENT LAW AND INVENTORSHIP: AN INDIAN LEGAL FRAMEWORK

The Indian patent system is governed by the **Patents Act, 1970**, which lays down the legal requirements for the grant, ownership, and enforcement of patents in the country.[32] The legislation is founded on the idea that innovation results from human creativity and that legal rights must be conferred upon a person or group of persons who invent something new.[33] Consequently, the Act is structured around a traditional human-centric understanding of inventorship.

Under **Section 2(1)(y)** of the Patents Act, the term "patentee" refers to the person entered on the patent register as the grantee or proprietor of the patent.[34] However, the law does not

[28] DeepMind, *AlphaFold: Using AI for Scientific Discovery*, https://deepmind.com/research/highlighted-research/alphafold.
[29] Max Planck Institute for Innovation and Competition, *Who Owns AI-Generated Inventions?* (2020), https://www.ip.mpg.de/fileadmin/ipmpg/content/stellungnahmen/MPI_IP_LegalPolicyAI_2020_ENG.pdf.
[30] Abhilasha Nautiyal, *Can Artificial Intelligence be an Inventor? An Indian Perspective*, SpicyIP (June 2, 2021), https://spicyip.com/2021/06/can-artificial-intelligence-be-an-inventor-an-indian-perspective.html.
[31] Peter Yu, *Inventing Around AI: Rethinking the Human Requirement in Patent Law*, 72 Fla. L. Rev. 1, 35–36 (2020).
[32] The Patents Act, No. 39 of 1970, India Code (1970).
[33] Ibid.
[34] The Patents Act § 2(1)(y).

expressly define the term "inventor." The concept is indirectly addressed in **Section 6**, which specifies that an application for a patent may be filed by the "true and first inventor" or an assignee of the inventor.[35] The term “true and first inventor,” while not defined in detail, is interpreted through judicial precedents and administrative practice to mean a natural person who has personally contributed to the inventive concept behind the patent application.[36]

Further, **Section 2(1)(s)** defines a "person" to include any company or association or body of individuals, whether incorporated or not.[37] However, this does not extend to non-human entities such as artificial intelligence systems. The legal presumption is that inventorship must arise from human intellect, and that the rights associated with the invention flow from this individual to an assignee or employer, depending on the circumstances.[38]

The Indian legal framework currently does not recognize machines, algorithms, or software systems as inventors, primarily because these entities do not have legal personhood. Legal personhood is a prerequisite for holding rights, responsibilities, and for being a party to legal transactions.[39] Since AI systems are not considered persons under Indian law, they cannot claim inventorship, file for a patent, or hold proprietary rights.[40]

Moreover, the **Indian Patent Office (IPO)** has not issued formal guidelines regarding AI-generated inventions. However, its approach can be inferred from its existing examination procedures and from the general legal position. In practice, all patent applications must disclose the name and address of the inventor(s) and must be accompanied by a declaration of inventorship signed by the applicant.[41] If the invention is not attributable to a natural person, the application is likely to be rejected for failure to comply with procedural and substantive requirements.[42]

This was evident in 2020 when a patent application was filed in India listing the AI system **DABUS** as the inventor. The application was rejected by the IPO on procedural grounds, and while no formal written decision was made publicly available, it aligned with global trends where patent offices in the US, UK, and Europe rejected similar filings on the basis that an AI

[35] Ibid. § 6.
[36] Manual of Patent Office Practice and Procedure, supra note 32, Ch. 6.
[37] The Patents Act § 2(1)(s).
[38] Gopakumar G. Nair, *Artificial Intelligence and Indian Patent Law – Challenges of Inventorship*, 25(5) J. Intellectual Property Rights. 235, 236 (2020).
[39] Avnita Lakhani, *AI and Legal Personhood: Revisiting the Inventorship Debate*, 13 NUJS L. Rev. 98, 105 (2020).
[40] Ibid.
[41] Manual of Patent Office Practice and Procedure, supra note 2, ch. 6.
[42] Abhilasha Nautiyal, *Can Artificial Intelligence be an Inventor? An Indian Perspective*, SpicyIP (June 2, 2021), https://spicyip.com/2021/06/can-artificial-intelligence-be-an-inventor-an-indian-perspective.html.

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cannot be considered an inventor.[43]

Indian jurisprudence has also emphasized the human element of inventorship. In the case of *Press Metal Corporation Ltd. v. Noshir Sorabji Pochkhanawalla* (AIR 1983 Bom 144), the Bombay High Court underlined that the grant of a patent is based on the novelty and inventive contribution of the individual who claims to be the inventor.[44] While the case dealt with human inventors, it illustrates the Indian courts' reliance on individual ingenuity and intention qualities that AI systems, by design, do not possess.[45]

In addition, the Indian patent system places significant emphasis on the inventive step and the disclosure requirement. An invention must not be obvious to a person skilled in the art, and the complete specification must disclose the method by which the invention works.[46] When the invention is generated by an AI system, questions arise regarding whether the AI itself conceived the idea or merely processed instructions given by a human. This complicates the issue of who fulfils the role of the "true and first inventor."[47]

India's current patent framework is rooted in a human-centered model of innovation. While it successfully accommodates AI-assisted inventions where human input remains central, it lacks the flexibility to recognize inventions that are autonomously generated by AI. As AI continues to evolve, this legal framework may need to be re-evaluated to ensure it remains inclusive, coherent, and innovation-friendly in the digital era.[48]

IV. INTERNATIONAL AND COMPARATIVE LEGAL PERSPECTIVES

The issue of whether an artificial intelligence (AI) system can be legally recognized as an inventor has triggered significant debate across various jurisdictions. While the technological capability of AI to generate novel and inventive outputs is widely acknowledged, most legal systems around the world remain hesitant to depart from the traditional requirement that an inventor must be a natural person.[49] A comparative overview of global patent regimes reveals both convergence and divergence in their treatment of AI-generated inventions, with implications for Indian law.[50]

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[43] Ibid.
[44] *Press Metal Corp. Ltd. v. Noshir Sorabji Pochkhanawalla*, AIR 1983 Bom 144 (India).
[45] Ibid.
[46] The Patents Act §§ 2(1)(ja), 10(4).
[47] Srividhya Ragavan & Feroz Ali, *Standard of Inventorship in Indian Patent Law: AI's Imminent Challenge*, 13 NUJS L. Rev. 1, 8–9 (2020).
[48] Ibid., at 14.
[49] WIPO, *Revised Issues Paper on Intellectual Property Policy and Artificial Intelligence*, WIPO Doc. WIPO/IP/AI/GE/20/1 REV. (May 21, 2020), https://www.wipo.int/edocs/mdocs/en/wipo_ip_ai_ge_20/wipo_ip_ai_ge_20_1_rev.pdf.
[50] Abhilasha Nautiyal, *AI and Patent Law: A Comparative Perspective*, SpicyIP (July 3, 2021),

United States

In the United States, the **United States Patent and Trademark Office (USPTO)** has consistently maintained that only natural persons can be named as inventors.[51] This position was reaffirmed in response to the DABUS patent application, where the USPTO rejected the filing on the grounds that an AI system does not meet the statutory definition of an inventor under the **Patent Act, 1952**, which refers to individuals and their inventive contributions.[52] The United States District Court and the Federal Circuit upheld this interpretation, emphasizing that inventorship requires a human with legal responsibility and cognitive intent.[53]

United Kingdom

Similarly, the **UK Intellectual Property Office (UKIPO)** rejected the DABUS application, stating that under the **Patents Act, 1977**, an inventor must be a natural person.[54] The matter was taken to the UK Court of Appeal, where the majority upheld the IPO's decision.[55] The Court found that the legislative framework in the UK was not equipped to recognize non-human inventors and that any change in this position would require a legislative amendment, not judicial intervention.[56]

European Union

The **European Patent Office (EPO)** has also rejected the notion of machine inventorship.[57] In decisions concerning the DABUS applications, the EPO concluded that the European Patent Convention (EPC) presumes that inventors must be human beings.[58] The Office held that attributing inventorship to an AI system creates a legal uncertainty, particularly in matters of ownership, responsibility, and accountability, which are integral to the patent system.[59]

Australia

In a brief departure from the trend, an Australian court initially ruled in favour of recognizing

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https://spicyip.com/2021/07/ai-and-patent-law-a-comparative-perspective.html.
[51] U.S. Patent & Trademark Office, Decision on Petition, Appl. No. 16/524,350 (Apr. 27, 2020).
[52] 35 U.S.C. § 100(f) (2012).
[53] Thaler v. Vidal, 43 F.4th 1207 (Fed. Cir. 2022).
[54] U.K. Intellectual Prop. Off., *Patent Decision: BL O/741/19*, Decision of the Comptroller (Dec. 4, 2019).
[55] Thaler v. Comptroller General of Patents, [2021] EWCA Civ 1374.
[56] Ibid.
[57] EPO, *EPO Refuses DABUS Patent Applications*, Press Release (Dec. 21, 2020), https://www.epo.org/news-events/news/2020/20201221.html.
[58] European Patent Convention art. 81 (1973).
[59] EPO, *Legal Framework on Inventorship and AI*, https://www.epo.org/news-events/in-focus/2021/artificial-intelligence.html.

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DABUS as an inventor in 2021.[60] The **Federal Court of Australia** found that the law did not explicitly prohibit non-human inventors and that the legislative intention was to promote innovation, regardless of the source.[61] However, this decision was overturned on appeal by the **Full Federal Court**, which emphasized that the statutory scheme implied a requirement of human inventorship.[62] The High Court later refused to grant leave for further appeal, bringing Australia's position back in alignment with other major jurisdictions.[63]

South Africa

South Africa stands out as the only jurisdiction that has officially granted a patent naming DABUS as the inventor.[64] However, this was due to the country's non-substantive examination system, where formalities are reviewed, but the invention's substance is not rigorously assessed before the grant.[65] While symbolically significant, this decision does not represent a shift in jurisprudential thinking and has limited persuasive value for countries with more stringent examination systems.[66]

China

China has adopted a cautious yet progressive stance. While Chinese patent law does not currently recognize AI systems as inventors, recent policy documents and judicial decisions indicate an openness to protecting AI-assisted innovations.[67] The **China National Intellectual Property Administration (CNIPA)** has emphasized the importance of technological neutrality in patent policy and is actively monitoring global developments.[68]

Thus, the dominant international view across most advanced jurisdictions is that inventorship must remain limited to human beings. However, the increasing frequency and quality of AI-generated outputs are pushing the boundaries of existing legal frameworks. For India, studying these global responses provides valuable insights into how its own patent regime might evolve. Adopting a forward-looking approach grounded in both comparative legal reasoning and technological pragmatism will be critical to ensure India's patent system

[60] Thaler v. Commissioner of Patents, [2021] FCA 879.
[61] Ibid.
[62] Commissioner of Patents v. Thaler, [2022] FCAFC 62.
[63] Thaler v. Commissioner of Patents, Special Leave Application No. S273/2022 (High Ct. Austl., Nov. 11, 2022) (leave to appeal denied).
[64] South African Patent No. 2021/03242 (July 28, 2021).
[65] Companies & Intellectual Property Commission (CIPC), *Patent Filing Procedure*, https://www.cipc.co.za/index.php/trade-marks-patents-designs-copyright/patents/.
[66] WIPO, *Technology Trends 2019: Artificial Intelligence*, https://www.wipo.int/edocs/pubdocs/en/wipo_pub_1055.pdf.
[67] CNIPA, *Annual Report 2022: Advancing AI-related Patent Practice*, http://english.cnipa.gov.cn/.
[68] Ibid.

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remains future-ready.[69]

V. JURISPRUDENTIAL AND PHILOSOPHICAL QUESTIONS ON INVENTORSHIP

The concept of inventorship is not merely a technical requirement within patent law, it is deeply rooted in jurisprudential and philosophical theories that define creativity, authorship, and moral rights.[70] These foundational questions become particularly significant in the context of artificial intelligence, where machines are capable of generating patentable inventions but cannot hold legal or moral responsibilities.[71] This raises the pressing question: can a non-human entity be considered an inventor within the meaning and spirit of the law?

Traditionally, inventorship has been grounded in **natural rights theory**, particularly John Locke's labour theory of property.[72] This theory suggests that individuals are entitled to the fruits of their intellectual labour, and patent protection serves as a reward for the time, effort, and creativity invested in solving a problem.[73] AI-generated inventions challenge this premise, as the machine does not possess consciousness, intention, or moral agency.[74] Unlike human inventors, AI does not labour in the moral or philosophical sense, it operates based on algorithms and training data, with no understanding or appreciation of the outcomes it produces.[75]

From a **utilitarian perspective**, which underpins much of modern intellectual property law, the goal is to incentivize innovation for the benefit of society.[76] Patent rights are granted not as a moral entitlement but to encourage disclosure of inventions that promote technological progress.[77] Under this view, it could be argued that even if an AI cannot hold rights, the output it generates should still be protected perhaps through attributing inventorship to the person who designed, trained, or used the AI system.[78] However, this raises a dilemma: who among the stakeholders (developer, user, data provider) deserves recognition as the inventor if

[69] Srividhya Ragavan & Feroz Ali, *Standard of Inventorship in Indian Patent Law: AI's Imminent Challenge*, 13 NUJS L. Rev. 1, 14–15 (2020).
[70] Peter Yu, *Inventing Around AI: Rethinking the Human Requirement in Patent Law*, 72 Fla. L. Rev. 1, 4–5 (2020).
[71] Max Planck Institute for Innovation and Competition, *Position Paper on Legal Policy for AI-Generated Inventions* 3–4 (2021), https://www.ip.mpg.de/fileadmin/ipmpg/content/stellungnahmen/MPI_IP_LegalPolicyAI_2020_ENG.pdf.
[72] John Locke, *Second Treatise of Government* ch. V, § 27 (1690); see also Justin Hughes, *The Philosophy of Intellectual Property*, 77 Geo. L.J. 287, 296–99 (1988).
[73] Ibid.
[74] Mark A. Lemley & Bryan Casey, *Remix My AI: Extending Authorial Control to Machine-Generated Works*, 98 B.U. L. Rev. 1309, 1316–17 (2018).
[75] Ibid.
[76] William M. Landes & Richard A. Posner, *The Economic Structure of Intellectual Property Law* 13–15 (2003).
[77] Ibid.
[78] Ryan Abbott, *The Artificial Inventor Project*, https://artificialinventor.com/.

none of them directly conceived the idea?[79]

The **personhood theory**, often used in copyright jurisprudence, suggests that creative works are extensions of an individual's personality and self-expression.[80] This theory further limits the scope of inventorship to human beings. Since AI lacks selfhood, it cannot be said to "express" anything in the philosophical or emotional sense. Applying this to patent law, an AI system that operates autonomously cannot satisfy the philosophical justification for being granted inventorship.[81]

Legal systems have also traditionally relied on the doctrine of legal personality to determine who can hold rights and duties.[82] Since AI is not recognized as a legal person, it cannot be sued, held liable, or enter into contracts. Inventorship, in this context, is more than naming a source, it carries implications for ownership, accountability, and enforcement. Assigning inventorship to a machine would therefore disrupt established legal principles that connect rights with responsibilities.[83]

Furthermore, the notion of causation and mental conception plays a central role in determining inventorship. Courts often evaluate who first conceptualized the core inventive idea.[84] In the case of AI-generated inventions, the absence of human mental conception challenges this framework. If no human can truthfully claim to have conceived the invention, can anyone be legally named as the inventor without violating the truthfulness requirement in patent law?[85]

These jurisprudential considerations highlight that recognizing AI as an inventor is not just a matter of updating statutory definitions, it requires a fundamental shift in how we understand authorship, rights, and human exceptionalism in innovation. Until such questions are addressed through thorough debate and legislative clarity, the legal status of AI-generated inventions will remain ambiguous and contentious.[86]

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[79] WIPO, *WIPO Technology Trends 2019: Artificial Intelligence*, at 44–45, https://www.wipo.int/edocs/pubdocs/en/wipo_pub_1055.pdf.
[80] Margaret Radin, *Property and Personhood*, 34 Stan. L. Rev. 957, 959–63 (1982).
[81] Abhilasha Nautiyal, *Can Artificial Intelligence Be an Inventor? An Indian Perspective*, SpicyIP (June 2, 2021), https://spicyip.com/2021/06/can-artificial-intelligence-be-an-inventor-an-indian-perspective.html.
[82] Avnita Lakhani, *AI and Legal Personhood: Revisiting the Inventorship Debate*, 13 NUJS L. Rev. 98, 103 (2020).
[83] Ibid.
[84] University of Utah v. Max-Planck-Gesellschaft Zur Foerderung Der Wissenschaften E.V., 734 F.3d 1315, 1324 (Fed. Cir. 2013).
[85] Press Metal Corp. Ltd. v. Noshir Sorabji Pochkhanawalla, AIR 1983 Bom 144 (India).
[86] Peter Yu, supra note 69, at 40.

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VI. CHALLENGES TO PATENTABILITY OF AI-GENERATED INVENTIONS IN INDIA

India, like most jurisdictions, has a patent framework that is built upon the assumption that inventorship is a human act.[87] As AI technologies advance and begin to independently generate inventions, the Indian patent regime faces multiple legal, procedural, and philosophical challenges. These challenges raise serious concerns about how AI-generated inventions can be integrated into an intellectual property system that was never designed to accommodate non-human inventors.[88]

1. Absence of Legal Recognition of AI as an Inventor

The most immediate and foundational challenge is that Indian law does not recognize artificial intelligence as a legal person.[89] Since **Section 6** of the **Patents Act, 1970** requires that a patent application be made by the "true and first inventor" or their assignee,[90] and the term "inventor" has consistently been interpreted to mean a natural person,[91] there is currently no legal avenue through which an AI system can be named as an inventor. As a result, patent applications listing AI as the inventor are likely to be rejected on procedural grounds, regardless of the merit of the invention.[92]

2. Attribution of Inventive Step

Another key challenge is determining whether an invention generated by AI satisfies the inventive step or non-obviousness requirement under **Section 2(1)(ja)**.[93] Patent law typically assesses this by asking whether the invention would have been obvious to a "person skilled in the art."[94] When AI autonomously creates something novel, it becomes difficult to assess whether the inventive step is a product of human ingenuity or simply a computational output based on data-fed algorithms.[95] This raises doubts about whether the standard of human inventive contribution is being met at all.[96]

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[87] Srividhya Ragavan & Feroz Ali, *Standard of Inventorship in Indian Patent Law: AI's Imminent Challenge*, 13 NUJS L. Rev. 1, 3 (2020).
[88] Peter Yu, *Inventing Around AI: Rethinking the Human Requirement in Patent Law*, 72 Fla. L. Rev. 1, 5–6 (2020).
[89] Avnita Lakhani, *AI and Legal Personhood: Revisiting the Inventorship Debate*, 13 NUJS L. Rev. 98, 103 (2020).
[90] The Patents Act, No. 39 of 1970, § 6, India Code.
[91] Manual of Patent Office Practice and Procedure, 3rd ed., ch. 6 (2019).
[92] Abhilasha Nautiyal, *Can Artificial Intelligence Be an Inventor? An Indian Perspective*, SpicyIP (June 2, 2021), https://spicyip.com/2021/06/can-artificial-intelligence-be-an-inventor-an-indian-perspective.html.
[93] The Patents Act, § 2(1)(ja).
[94] Ibid.
[95] WIPO, *WIPO Technology Trends 2019: Artificial Intelligence* 24–26, https://www.wipo.int/edocs/pubdocs/en/wipo_pub_1055.pdf.
[96] Max Planck Institute for Innovation and Competition, *Position Paper on Legal Policy for AI-Generated Inventions* 6–7 (2021),

3. Disclosure and the Black-Box Problem

A patent applicant must provide a complete specification that enables a person skilled in the art to reproduce the invention.[97] This requirement is rooted in the principles of transparency and disclosure, which are fundamental to the quid pro quo of the patent system.[98] However, AI systems, particularly those using deep learning and neural networks, often operate as black boxes, producing results through complex, non-linear processes that are not easily explainable.[99] This lack of transparency creates difficulties in meeting the disclosure requirement, making it challenging for patent examiners to assess whether the invention is sufficiently described.[100]

4. Identifying the Proper Inventor or Owner

In the context of AI-generated inventions, it is unclear who should be named as the inventor or owner. Should it be the software developer who created the AI system, the organization that trained it, or the individual who operated it for a specific task?[101] Each of these parties may have played a role in the invention's genesis, but none may meet the traditional threshold of conception of the inventive idea.[102] This creates practical complications for assigning ownership and enforcing rights, especially in collaborative or corporate environments.[103]

5. Legal Ambiguity and Lack of Guidance

As of now, the **Indian Patent Office (IPO)** has not issued specific guidelines regarding AI-generated inventions.[104] The absence of regulatory clarity creates uncertainty for applicants and patent examiners alike. Without standardized procedures or interpretive frameworks, decisions are left to individual discretion, leading to inconsistent outcomes and potential legal disputes.[105]

6. Risk of Over-Patenting and Innovation Stagnation

Allowing patents for AI-generated inventions without clear boundaries could lead to a surge in patent filings, many of which might be incremental or automated combinations of existing

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https://www.ip.mpg.de/fileadmin/ipmpg/content/stellungnahmen/MPIIP_LegalPolicyAI_2020_ENG.pdf.
[97] The Patents Act, § 10(4).
[98] Rina Elster Pantalony, *Understanding the Quid Pro Quo in IP Law*, WIPO Academy (2018).
[99] Surabhi Sharma, *The Black Box of AI and the Problem of Patent Disclosure*, 25 J. Intell. Prop. Rts. 321, 322 (2020).
[100] Ibid.
[101] WIPO, *Artificial Intelligence and Intellectual Property Policy*, https://www.wipo.int/about-ip/en/artificial_intelligence/.
[102] Abbott, supra note 87, at 35–36.
[103] Srividhya Ragavan & Feroz Ali, supra note 86, at 8–9.
[104] Indian Patent Office, *Manual of Patent Office Practice and Procedure*, Ch. 6.
[105] Ibid.

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knowledge.[106] This could crowd the patent landscape and result in over-patenting, where trivial innovations receive protection, ultimately hindering access to knowledge and slowing down genuine innovation.[107]

7. Ethical and Policy Concerns

Beyond legal hurdles, AI inventorship raises ethical concerns regarding accountability and misuse.[108] If no human is held accountable for an invention's creation, there may be risks associated with granting monopolies without assigning responsibility. Questions also arise around moral rights, liability for defective inventions, and the potential misuse of AI-created patents in litigation or competition.[109]

The Indian patent regime is currently ill-equipped to handle the complex challenges posed by AI-generated inventions. These issues go beyond simple statutory interpretation and touch upon the core assumptions of human creativity, legal rights, and technological control. Addressing them will require a balanced, multidisciplinary approach that integrates law, technology, ethics, and public policy.[110]

VII. NEED FOR LEGAL REFORM: RETHINKING INVENTORSHIP

As artificial intelligence systems become more capable of generating patentable inventions, India's traditional, human-centric understanding of inventorship faces increasing strain.[111] The current legal framework under the Patents Act, 1970 does not recognize non-human inventors, and the absence of legal recognition for AI-generated inventions risks excluding significant technological contributions from the scope of patent protection.[112] This gap calls for a timely and well-considered legal reform that balances the need to promote innovation with maintaining the integrity and accountability of the patent system.[113]

1. Revisiting the Definition of 'Inventor'

The most urgent area for reform lies in the definition of "inventor." Currently, Indian law implicitly assumes inventorship to reside in a natural person.[114] Given the emergence of AI-generated inventions, lawmakers must consider whether to extend this definition to include

[106] Peter Yu, supra note 87, at 40–41.
[107] Abhilasha Nautiyal, supra note 91.
[108] Ryan Abbott, *The Reasonable Robot: Artificial Intelligence and the Law* 114–18 (2020).
[109] Ibid.
[110] Srividhya Ragavan & Feroz Ali, supra note 86, at 14.
[111] Peter Yu, *Inventing Around AI: Rethinking the Human Requirement in Patent Law*, 72 Fla. L. Rev. 1, 5–6 (2020).
[112] Srividhya Ragavan & Feroz Ali, *Standard of Inventorship in Indian Patent Law: AI's Imminent Challenge*, 13 NUJS L. Rev. 1, 3 (2020).
[113] Ibid., at 14
[114] The Patents Act, No. 39 of 1970, § 6, India Code.

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contributions made by non-human entities.[115] One possibility is not to confer inventorship status on AI itself but to attribute inventions to the individuals who developed or controlled the AI system.[116] This would preserve the traditional link between rights and responsibilities while acknowledging the AI's role in the inventive process.

Alternatively, a **sui generis** legal framework could be introduced to specifically regulate AI-generated inventions.[117] This model would treat AI-created outputs under a separate category, similar to how database rights and semiconductor layout designs are protected in many jurisdictions.[118] It would allow India to develop rules uniquely tailored to the challenges of machine-generated innovation, without having to force such inventions into an ill-fitting traditional structure.[119]

2. Developing Clear Guidelines for Patent Applications Involving AI

In the short term, the **Indian Patent Office (IPO)** can issue administrative guidelines clarifying how AI-assisted and AI-generated inventions should be handled.[120] For example, the IPO could provide a checklist for applicants to disclose the role of AI in the inventive process, identify the human contributors (if any), and explain how inventive step and disclosure requirements are met in AI-generated contexts.[121] This would help create uniformity in examination and reduce ambiguity for inventors, patent attorneys, and examiners.[122]

The IPO could also establish a category for AI-assisted inventions, where human inventors are supported by AI tools.[123] This would maintain the requirement of human inventorship while acknowledging the evolving nature of innovation.[124]

3. Learning from International Experiences

India should closely monitor how other jurisdictions adapt their patent laws to deal with AI-generated inventions.[125] For example, some countries are exploring whether the owner or

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[115] Avnita Lakhani, *AI and Legal Personhood: Revisiting the Inventorship Debate*, 13 NUJS L. Rev. 98, 104–05 (2020).
[116] Ryan Abbott, *The Artificial Inventor Project*, https://artificialinventor.com/.
[117] Max Planck Institute for Innovation and Competition, *Position Paper on Legal Policy for AI-Generated Inventions* 9 (2021).
[118] WIPO, *Intellectual Property and New Emerging Technologies: Database Protection* (2020), https://www.wipo.int/edocs/pubdocs/en/wipo_pub_1055.pdf.
[119] Ibid.
[120] Manual of Patent Office Practice and Procedure, 3rd ed., ch. 6 (2019).
[121] Ibid.
[122] Surabhi Sharma, *The Black Box of AI and the Problem of Patent Disclosure*, 25 J. Intell. Prop. Rts. 321, 324 (2020).
[123] Srividhya Ragavan & Feroz Ali, supra note 111, at 9.
[124] Ibid.
[125] WIPO, *Revised Issues Paper on Intellectual Property Policy and Artificial Intelligence*, WIPO Doc.

developer of an AI system can be designated as the legal inventor, or whether AI-generated works should be denied patent protection altogether unless a human intermediary is involved.[126] South Africa's acceptance of a DABUS patent and the legal debates in the U.S., U.K., and Australia offer valuable case studies.[127] By studying these responses, India can adopt a reform model that is suited to its own legal system and innovation ecosystem.[128]

4. Encouraging Public Debate and Multi-Stakeholder Engagement

The rethinking of inventorship cannot happen in a vacuum. It requires broad consultation involving policymakers, legal experts, technologists, academia, startups, and civil society.[129] Innovation is no longer confined to corporate R&D departments, it increasingly emerges from startups, collaborative platforms, and open-source communities that often rely on AI.[130] Reforms must be responsive to this reality and ensure inclusivity.

The government can play a proactive role by organizing public consultations and forming expert committees to study the implications of AI-generated inventions.[131] White papers, policy briefs, and parliamentary discussions can help shape a consensus-driven reform agenda that aligns legal principles with technological advancements.[132]

5. Aligning Patent Law with Broader Innovation Policy

Legal reform around AI-generated inventions must also align with India's broader national policies, such as the **National Intellectual Property Rights Policy** and **Digital India** initiative.[133] Encouraging AI-led innovation, especially in sectors like healthcare, agriculture, and education, is a national priority.[134] Creating a patent system that supports and protects such innovation will be essential to realizing India's vision of becoming a global digital leader.[135]

Therefore, the rise of AI-generated inventions presents both a challenge and an opportunity. India's patent law must evolve to accommodate new realities while preserving core legal

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WIPO/IP/AI/GE/20/1 REV. (May 21, 2020).

[126] Ibid., at 8-10

[127] South African Patent No. 2021/03242 (July 28, 2021); Thaler v. Vidal, 43 F.4th 1207 (Fed. Cir. 2022); Thaler v. Comptroller General of Patents [2021] EWCA Civ 1374.

[128] Peter Yu, supra note 110, at 38–39.

[129] Abhilasha Nautiyal, *Can Artificial Intelligence Be an Inventor? An Indian Perspective*, SpicyIP (June 2, 2021), https://spicyip.com/2021/06/can-artificial-intelligence-be-an-inventor-an-indian-perspective.html.

[130] Ibid.

[131] Ministry of Commerce & Industry, *National IPR Policy*, available at https://dpiit.gov.in/sites/default/files/National_IPR_Policy_English.pdf.

[132] Ibid.

[133] Ibid.

[134] Ministry of Electronics & Information Technology, *National Strategy for Artificial Intelligence #AIforAll* (2018), https://indiaai.gov.in/research-reports/national-strategy-for-artificial-intelligence.

[135] Ibid.

values. Through a mix of statutory reform, administrative guidance, and inclusive policy-making, India can establish a patent regime that supports innovation in the age of intelligent machines.[136]

VIII. RECOMMENDATIONS AND THE WAY FORWARD

To ensure that India's patent regime remains adaptive and future-ready in the face of rapid advancements in artificial intelligence, a combination of legal, administrative, and policy-based measures must be adopted.[137] While the current law does not permit the recognition of AI as an inventor, a proactive approach can help bridge the gap between innovation and regulation.[138]

1. Clarify the Scope of Human Involvement in Inventorship

One immediate step is to provide guidance on how AI-assisted inventions should be treated.[139] The Indian Patent Office (IPO) should issue examination guidelines that clearly differentiate between AI-assisted and AI-generated inventions.[140] For AI-assisted inventions, human inventors should continue to be recognized, with a requirement to disclose how AI contributed to the inventive process.[141] This will maintain the integrity of inventorship while acknowledging the evolving role of AI.[142]

2. Establish a Disclosure Framework for AI Involvement

Applicants should be mandated to disclose the nature and extent of AI's role in the invention during patent filing.[143] This could include whether the AI was used for data analysis, ideation, prototyping, or autonomous invention.[144] Such transparency will assist examiners in assessing novelty, inventive step, and sufficiency of disclosure while allowing for consistent examination standards.[145]

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[136] Srividhya Ragavan & Feroz Ali, supra note 111, at 14.
[137] Peter Yu, *Inventing Around AI: Rethinking the Human Requirement in Patent Law*, 72 Fla. L. Rev. 1, 5–6 (2020).
[138] Srividhya Ragavan & Feroz Ali, *Standard of Inventorship in Indian Patent Law: AI's Imminent Challenge*, 13 NUJS L. Rev. 1, 3 (2020).
[139] WIPO, *Revised Issues Paper on Intellectual Property Policy and Artificial Intelligence*, WIPO Doc. WIPO/IP/AI/GE/20/1 REV. Pg. 41–44 (May 21, 2020).
[140] Indian Patent Office, *Manual of Patent Office Practice and Procedure*, 3rd ed., ch. 6 (2019).
[141] Surabhi Sharma, *The Black Box of AI and the Problem of Patent Disclosure*, 25 J. Intell. Prop. Rts. 321, 324 (2020).
[142] Max Planck Institute for Innovation and Competition, *Position Paper on Legal Policy for AI-Generated Inventions* 6–7 (2021), https://www.ip.mpg.de/fileadmin/ipmpg/content/stellungnahmen/MPI_IP_LegalPolicyAI_2020_ENG.pdf.
[143] Ibid., at 10
[144] WIPO, *Guidelines on AI Invention Disclosures* (2021).
[145] The Patents Act, No. 39 of 1970, §§ 2(1)(j), 2(1)(ja), 10(4), India Code.

3. Explore the Sui Generis Option

India can consider creating a sui generis legal mechanism specifically for AI-generated inventions that do not involve direct human conception.[146] This system could recognize the role of AI developers, operators, or owners as right holders, even if not traditional inventors, and offer limited protection similar to how layout designs or plant varieties are protected under distinct statutes.[147]

4. Promote Stakeholder Consultations and Policy Debates

Before amending core provisions of the Patents Act, it is essential to initiate multi-stakeholder discussions involving industry, academia, legal professionals, technologists, and civil society.[148] Such consultations will ensure that any reform is not only legally sound but also technologically and economically relevant.[149]

5. Build Institutional Capacity

To deal with the complexity of AI-related inventions, patent examiners and staff must be trained in emerging technologies, machine learning systems, and interdisciplinary assessment methods.[150] Developing a pool of technologically competent patent officers will be key to implementing any reform effectively.[151]

IX. CONCLUSION

The advent of artificial intelligence has fundamentally transformed the nature of innovation.[152] AI systems are no longer limited to assisting human inventors; they are increasingly capable of generating novel and useful inventions without significant human input.[153] This development challenges the core principles on which traditional patent law is built especially the notion that inventorship must be tied to a natural person.[154] In India, the Patents Act, 1970, as it currently stands, offers no scope to accommodate AI-generated

[146] WIPO, *Intellectual Property and Emerging Technologies: Sui Generis Protection Systems* (2020).
[147] See Protection of Plant Varieties and Farmers' Rights Act, No. 53 of 2001, India Code; Semiconductor Integrated Circuits Layout-Design Act, No. 37 of 2000, India Code.
[148] Ministry of Commerce & Industry, *National IPR Policy* (2016), https://dpiit.gov.in/sites/default/files/National_IPR_Policy_English.pdf.
[149] Abhilasha Nautiyal, *Can Artificial Intelligence Be an Inventor? An Indian Perspective*, SpicyIP (June 2, 2021), https://spicyip.com/2021/06/can-artificial-intelligence-be-an-inventor-an-indian-perspective.html.
[150] Ministry of Electronics & Information Technology, *National Strategy for Artificial Intelligence #AIforAll* (2018), https://indiaai.gov.in/research-reports/national-strategy-for-artificial-intelligence.
[151] Ibid.
[152] Peter Yu, *Inventing Around AI: Rethinking the Human Requirement in Patent Law*, 72 Fla. L. Rev. 1, 3–4 (2020).
[153] Ryan Abbott, *The Reasonable Robot: Artificial Intelligence and the Law* 103–05 (2020).
[154] Srividhya Ragavan & Feroz Ali, *Standard of Inventorship in Indian Patent Law: AI's Imminent Challenge*, 13 NUJS L. Rev. 1, 3–4 (2020).

inventions, thereby creating a significant legal and policy vacuum.[155]

Through a detailed examination of Indian patent law, it is evident that the existing framework is not equipped to address the complexities of machine-generated innovation.[156] The lack of legal recognition for non-human inventors, the emphasis on human mental conception, and procedural requirements such as declarations of inventorship all contribute to the exclusion of AI from the patent landscape.[157] At the same time, comparative insights from jurisdictions like the United States, the United Kingdom, Australia, and China show that this is a global challenge one that requires urgent and coordinated legal reform.[158]

The jurisprudential and philosophical foundations of inventorship also highlight the limitations of applying traditional human-centric theories to artificial intelligence.[159] The current legal standards of accountability, creativity, and moral rights are difficult to reconcile with non-human creators.[160] However, this does not mean that AI-generated inventions should be left unregulated or excluded from protection entirely.[161]

India now stands at a crucial juncture. It must decide whether to preserve the existing framework with minor adaptations or to boldly rethink inventorship in light of technological evolution.[162] A balanced and pragmatic approach would involve a combination of statutory amendments, administrative guidelines, and possibly a sui generis system tailored to AI-generated inventions.[163]

Ultimately, the goal should be to ensure that the Indian patent regime remains inclusive, forward-looking, and capable of promoting innovation in the age of intelligent machines while maintaining transparency, legal certainty, and ethical accountability.[164] Reform is not only necessary but inevitable if India wishes to remain competitive and relevant in the global knowledge economy.[165]

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[155] The Patents Act, No. 39 of 1970, §§ 2(1)(y), 6, India Code

[156] Abhilasha Nautiyal, *Can Artificial Intelligence Be an Inventor? An Indian Perspective*, SpicyIP (June 2, 2021), https://spicyip.com/2021/06/can-artificial-intelligence-be-an-inventor-an-indian-perspective.html.

[157] Manual of Patent Office Practice and Procedure, 3rd ed., ch. 6 (2019).

[158] WIPO, *Revised Issues Paper on Intellectual Property Policy and Artificial Intelligence*, WIPO Doc. WIPO/IP/AI/GE/20/1 REV. Pg.31–42 (May 21, 2020).

[159] Margaret Radin, *Property and Personhood*, 34 Stan. L. Rev. 957, 960–65 (1982).

[160] Mark A. Lemley & Bryan Casey, *Remix My AI: Extending Authorial Control to Machine-Generated Works*, 98 B.U. L. Rev. 1309, 1315–16 (2018).

[161] Max Planck Institute for Innovation and Competition, *Position Paper on Legal Policy for AI-Generated Inventions* 5–6 (2021).

[162] Srividhya Ragavan & Feroz Ali, supra note 153, at 10–11.

[163] WIPO, *Intellectual Property and Emerging Technologies: Sui Generis Protection Systems* (2020).

[164] Ministry of Commerce & Industry, *National IPR Policy* (2016), https://dpiit.gov.in/sites/default/files/National_IPR_Policy_English.pdf.

[165] Ministry of Electronics & Information Technology, *National Strategy for Artificial Intelligence #AIforAll* (2018), https://indiaai.gov.in/research-reports/national-strategy-for-artificial-intelligence.

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