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RETHINKING INVENTORSHIP AND PATENT ELIGIBILITY IN AN AGE OF AI: A STUDY ON PATENTS AND ARTIFICIAL INTELLIGENCE

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I. ABSTRACT

This paper examines the evolving intersection between patent law and artificial intelligence (AI), focusing on two critical issues: the legal recognition of AI as an inventor and the patentability of AI-generated inventions. It analyses how patent regimes in key jurisdictions – including the United States, United Kingdom, European Union, and India – have responded to AI inventorship, particularly through landmark rulings such as the DABUS case. The paper adopts a doctrinal and comparative legal methodology, examining legislative frameworks, administrative decisions, and case laws. It explores the challenges posed by AI technologies to traditional patent criteria such as novelty, non-obviousness, and utility, and evaluates how existing legal standards are adapting to technological progress. Based on this analysis, the study proposes a hybrid inventorship framework and tailored patentability tests for AI-generated inventions to promote innovation while preserving human accountability.

II. KEYWORDS

AI Inventorship, DABUS Case, European Patent Convention, USPTO Guidance, Patentability Criteria, Intellectual Property Law, Indian Patents Act 1970, AI and Innovation Policy

III. INTRODUCTION

Artificial intelligence (AI) is fundamentally reshaping the landscape of innovation by generating autonomous solutions, designs, and outputs that challenge traditional notions of human authorship. Patent law, historically grounded in the idea of human intellectual creativity, now confronts complex legal and ethical dilemmas: Can an AI

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be an inventor? Should AI-generated outputs be eligible for patent protection? These questions lie at the core of emerging jurisprudence, particularly as AI systems increasingly generate inventions without human input. Recent technological advancements and legal controversies—especially surrounding Stephen Thaler's AI system *DABUS*—have brought these issues into the spotlight. In 2023 alone, the number of AI-related patent applications surpassed 150,000 globally, with the United States and China leading the filings, followed by the European Union, Japan, South Korea, and India (WIPO Technology Trends Report 2023). This surge has prompted patent offices and courts across jurisdictions to reconsider how existing legal definitions of "inventorship" and "patentability" apply to AI-generated innovations. This paper aims to explore the dual challenge AI presents to patent law: (1) whether AI can be recognised as an inventor under current legal frameworks, and (2) whether AI-generated inventions satisfy the requirements of novelty, non-obviousness, and utility under established patentability standards. Using a doctrinal and comparative legal approach, the study examines recent developments in six key jurisdictions—United States, European Union, United Kingdom, India, Japan, and South Korea. It further evaluates the ethical, social, and policy implications of recognising AI as an inventor and proposes legal reforms that balance technological advancement with human accountability.

A. RESEARCH QUESTIONS

1. Can artificial intelligence be legally recognised as an "inventor" under existing patent laws?
2. Are AI-generated inventions capable of fulfilling the traditional criteria for patentability: novelty, non-obviousness, and utility?
3. How have different jurisdictions interpreted and responded to the challenge of AI inventorship?
4. What legal and ethical frameworks are necessary to accommodate AI innovation without undermining human-centric principles of patent law?

B. METHODOLOGY

This paper adopts a doctrinal and comparative legal research methodology. The doctrinal method involves analysis of primary legal sources including statutory provisions such as the Indian Patents Act 1970, the European Patent Convention, and the U.S. Patent Act. The research also examines leading judicial decisions, including *Thaler v Comptroller-General of Patents* in the UK, *Thaler v Vidal* in the United States, and relevant EPO decisions. The comparative aspect evaluates how different jurisdictions respond to evolving questions of AI inventorship and patentability. Secondary sources include scholarly articles, policy papers, and official guidance documents from bodies like the USPTO, EPO, and WIPO. The paper also uses normative legal analysis to propose policy reforms that align with both innovation and accountability.

IV. AI AS INVENTOR

The debate surrounding AI as a legal inventor has intensified as AI systems increasingly generate novel inventions without direct human input. Traditional patent law frameworks, however, remain rooted in the notion of human authorship, requiring that an inventor be a natural person who contributes intellectually to the invention. The emergence of AI tools such as DABUS, capable of autonomously generating technical solutions, has triggered global legal scrutiny and reform discourse. This section explores the evolving legal responses across key jurisdictions.

A. LEGAL PERSPECTIVES ON AI INVENTORSHIP

Most jurisdictions continue to reject the recognition of AI as an inventor under existing patent laws. The dominant position remains that inventorship must be attributed to a natural person, primarily for reasons of legal accountability, ownership rights, and statutory interpretation. However, differences arise in the extent to which AI-generated contributions may be included under "AI-assisted" inventions, where a human co-inventor oversees or directs the system. Below, we examine specific jurisdictional responses.

1. United States: USPTO and Federal Courts

The United States Patent and Trademark Office (USPTO), in its **February 2024 "Inventorship Guidance for AI-Assisted Inventions"**, reaffirmed that: "Each claim in a patent application must be attributed to at least one natural person who significantly contributed to its conception."[3] This guidance builds upon the Federal Circuit's decision in *Thaler v Vidal*, where the court ruled that AI systems, being non-human, cannot qualify as inventors under **35 U.S.C. S 100(f)**.[4] The USPTO has thus adopted a **"significant human contribution" test** to assess inventorship in AI-assisted applications. Inventions purely generated by AI without identifiable human conceptual input remain unpatentable.

2. European Union: EPO Position and 2024 Update

The European Patent Office (EPO) has consistently rejected applications listing AI as an inventor. In its 2020 decisions J 8/20 and J 9/20, and reaffirmed in 2024, the EPO stated that: "Under the European Patent Convention (EPC), only a natural person can be designated as the inventor."[5] The most recent rejection of Stephen Thaler's DABUS-based application in 2024 reiterates that inventorship is inherently tied to legal personality, and since AI lacks such status, it cannot be the originator of patent rights.[6] Furthermore, the EPO emphasized the importance of accountability and enforceability as rationale behind requiring a natural person.

3. India: Patent Office Objection and Parliamentary Review

India's stance aligns with the traditional human-centric view of inventorship. In Application No. 202017019068, the Indian Patent Office rejected an AI-invented application, stating that under Sections 2(1)(y) and 6 of the Indian Patents Act 1970, only a human can be considered an inventor.[7] Additionally, in 2024, a Parliamentary Standing Committee on Commerce recommended reviewing the definition of

[3] USPTO, *Inventorship Guidance for AI-Assisted Inventions* (February 2024) https://www.uspto.gov/sites/default/files/documents/InventorshipGuidanceAI2024.pdf accessed 1 August 2025.
[4] *Thaler v Vidal* 43 F4th 1207 (Fed Cir 2022).
[5] EPO Boards of Appeal, *Thaler/Designation of inventor* J 8/20 and J 9/20 (21 December 2021).
[6] EPO Examining Division Decision on DABUS (2024 Update), see https://www.epo.org/law-practice/case-law-appeals/pdf/j820.pdf accessed 1 August 2025.
[7] Indian Patent Office, Objection to Application No. 202017019068, Decision dated 3 April 2024.

"inventor" to explicitly clarify the legal position on AI inventorship. However, no statutory amendments have been enacted yet.

4. United Kingdom: High Court and Supreme Court Position

The United Kingdom has firmly upheld the principle that inventors must be natural persons. In *Thaler v Comptroller-General of Patents, Designs, and Trade Marks*, the Court of Appeal concluded that under sections 7 and 13 of the Patents Act 1977, only a human being can be an inventor.[8] Stephen Thaler, the creator of DABUS, argued that the statutory language "actual deviser of the invention" could extend to autonomous AI. However, the court rejected this interpretation, affirming that UK patent law does not accommodate non-human inventors.

In 2024, the UK Supreme Court dismissed Thaler's final appeal, reinforcing that legal rights over patentable inventions cannot originate from an AI. The judgment noted that legal frameworks surrounding inventorship are built upon agency, ownership, and transferability of rights, all of which presume human legal personality.[9]

However, the Supreme Court also acknowledged the potential need for legislative reform, suggesting that the issue may require Parliamentary intervention to modernize patent law in response to AI-driven innovation.

V. EMERGING PERSPECTIVES IN ASIA

A. JAPAN

Japan has not amended its patent legislation to recognise AI as an inventor but has taken proactive steps to study the issue. In 2019 and 2021, the Japan Patent Office (JPO) commissioned expert reports exploring the implications of AI-generated inventions. These reports concluded that inventorship under Japanese patent law remains limited to natural persons. However, Japan remains open to regulatory reform, and its deliberative approach suggests future legal flexibility.[10]

[8] *Thaler v Comptroller-General of Patents, Designs, and Trade Marks* [2021] EWCA Civ 1374.
[9] Thaler v Comptroller-General of Patents, Designs, and Trade Marks (UKSC Appeal No. 2023/00124, decided 15 February 2024).
[10] Japan Patent Office, *AI and Intellectual Property Policy Report* (2021) https://www.jpo.go.jp/e/news/report/ai_policy.html accessed 1 August 2025.

B. SOUTH KOREA

The Korea Intellectual Property Office (KIPO) has engaged in discussions with academics and industry stakeholders since 2021 regarding AI inventorship. Though no legislative amendments have been enacted, KIPO has recognized the potential impact of AI technologies on innovation ecosystems. Reports indicate that KIPO is evaluating the feasibility of allowing AI-generated inventions through human-AI collaboration models.[11]

C. INDIA

India has emerged as a key jurisdiction in the AI inventorship debate. In Application No. 202017019068, the Indian Patent Office rejected a patent application naming DABUS as the inventor, holding that Sections 2(1)(y) and 6 of the Patents Act 1970 only recognize human inventors.[12] The decision cited the lack of legal agency and accountability in AI systems as a central barrier to recognition.

In 2024, the Parliamentary Standing Committee on Commerce issued a report recommending that India revisit the definition of "inventor" in light of evolving technological developments.[13] The Committee suggested the exploration of a hybrid inventorship framework and supported further consultation with legal and technical experts. While no statutory amendments have been enacted, India is actively engaging in policy discourse around this issue.

VI. POLICY AND ETHICAL IMPLICATIONS OF AI INVENTORSHIP

The question of AI inventorship is not solely legal—it also carries profound ethical and policy implications. Central to the debate are concerns about accountability, legal agency, recognition, and the potential disruption of human incentive structures. As

[11] Korea Intellectual Property Office, *AI-Related Patent Policy Exploratory Meeting Summary* (2021) https://www.kipo.go.kr accessed 1 August 2025.
[12] Indian Patent Office, Rejection Order for Application No. 202017019068, dated 3 April 2024.
[13] Parliamentary Standing Committee on Commerce, *161st Report on Review of the Intellectual Property Rights Regime in India* (2024), para 6.3–6.9.

AI systems operate increasingly as "black boxes," the lack of transparency in their decision-making exacerbates the legal and moral challenges of assigning inventorship.

A. ACCOUNTABILITY AND LEGAL AGENCY

Patent law is predicated on the idea that inventors must be accountable for their inventions, whether in terms of regulatory compliance, infringement liability, or ethical responsibility. An AI system, however, lacks legal personhood and cannot be held accountable under current laws. Scholars such as Abbott argue that this deficiency creates a "moral gap" in the patent regime when AI is listed as an inventor without any human attribution.[14]

The "black box" problem, where AI systems produce outputs that are neither predictable nor explainable by their developers, makes it nearly impossible to assign liability or identify responsible actors.[15] This raise concerns not only in patent law but also in product liability, environmental safety, and medical device regulation. Policymakers are increasingly advocating for "human-in-the-loop" models, where human supervision is required to validate AI-generated outcomes before any legal rights are conferred.

B. RECOGNITION AND THE ATTRIBUTION OF INNOVATION

A key ethical challenge is whether and how to recognize the contribution of AI in the inventive process. While AI systems can autonomously generate patentable subject matter, many argue that recognition should be reserved for human creators who develop, train, and control the system. Scholars have proposed multi-tiered attribution models that distinguish between:

- Primary human inventors (who supervise or guide the AI)
- AI systems (as non-legal contributors)
- Secondary human contributors (data scientists, system designers)

[14] Ryan Abbott, *The Reasonable Robot: Artificial Intelligence and the Law* (CUP 2020) ch 3.
[15] Sandra Wachter, Brent Mittelstadt, and Chris Russell, 'Why Fairness Cannot Be Automated: Bridging the Gap Between EU Non-Discrimination Law and AI' (2021) 43(1) Human Rights Law Review 1.

Such models promote transparency and ensure that human ingenuity remains central to intellectual property regimes, while still acknowledging the transformative role of AI.

C. INCENTIVE STRUCTURES AND INNOVATION

One justification for patent protection is to incentivize human innovation. If AI systems are permitted to generate patents independently, this may distort the incentive structure **by** devaluing human creativity**.** Moreover, large corporations with access to advanced AI could monopolize innovation pipelines, creating technological gatekeeping that suppresses smaller inventors or startups.[16]

To counter this, scholars propose:

- Introducing separate categories for AI-generated inventions with shorter patent terms or stricter requirements.
- Establishing AI accountability registries where developers must document training data, system oversight, and human input.

D. OVER-PATENTING AND ITS SOCIAL IMPACT

AI's capacity to generate inventions at scale could lead to "hyper-patenting" and the formation of patent thickets, where dense and overlapping patent claims hinder subsequent innovation. These issues disproportionately affect developing economies and individual inventors who lack the resources to navigate complex IP portfolios.

To safeguard public interest, some have proposed:

- Compulsory licensing frameworks for AI-generated patents that cover essential technologies (e.g., healthcare, climate tech).
- Requiring disclosure of AI involvement in all patent applications to ensure transparency and facilitate equitable access.

[16] Daniel J Gervais, 'The Machine as Author' (2020) 105(5) Iowa L Rev 2053, 2075.

- WIPO's 2024 AI and IP Working Group has emphasized that ethical principles must inform legislative and administrative patent procedures, particularly in the context of rapid AI advancement.[17]

VII. PATENTABILITY OF AI-GENERATED INVENTIONS

Patent law traditionally requires that an invention satisfy three core criteria: novelty, non-obviousness, and utility. These standards are rooted in assumptions of human ingenuity. However, with AI systems capable of autonomously solving problems, optimizing designs, and generating novel outputs, these criteria face new interpretive challenges.

A. NOVELTY AND AUTONOMOUS INVENTIONS

An invention is novel if it has not been disclosed in any prior art. AI systems, such as DABUS, can generate designs that appear unprecedented, raising the question: can output from a machine that is trained on prior data but recombines it in unique ways be considered truly novel?

In *Thaler v Commissioner of Patents*, the Federal Court of Australia initially accepted an AI as an inventor under the novelty criterion, but this was reversed on appeal.[18] While the court acknowledged the originality of the AI-generated food container design, it emphasized that legal recognition still requires a human inventor.

Patent offices now scrutinize the training data and the mode of generation to determine if the result is truly new or merely a derivative synthesis of known elements. As generative models like GPT and Midjourney become capable of designing new compounds, devices, and algorithms, the question of creative recombination vs. innovation becomes critical.

B. NON-OBVIOUSNESS AND HUMAN INGENUITY STANDARDS

Non-obviousness requires that the invention not be something an ordinarily skilled person would easily deduce. With AI capable of processing vast data sets and

[17] World Intellectual Property Organization, *Report of the WIPO Conversation on IP and Frontier Technologies* (June 2024) https://www.wipo.int accessed 1 August 2025.
[18] *Thaler v Commissioner of Patents* [2021] FCA 879 (Fed Ct of Australia); *Commissioner of Patents v Thaler* [2022] FCAFC 62 (Full Ct of the Fed Ct of Australia).

identifying patterns that humans would not foresee, it challenges how "inventive step" is measured.

For example, in Application No. 15/684,215, DABUS generated a fractal container design based on machine learning processes. Though it was functionally novel, the USPTO rejected the application for lack of a human inventor, not for lack of inventive merit.[19]

Scholars argue that AI systems operating beyond human logic require a new framework for evaluating inventive step one that considers the computational creativity of the system while maintaining thresholds to prevent trivial or accidental discoveries from being patented.

Abbott and others suggest introducing a "reasoned unpredictability test", where the key inquiry is whether the outcome could have been reasonably predicted by a human, not just the AI.[20]

C. UTILITY AND PRACTICAL APPLICATION

The utility requirement remains the most straightforward in AI patentability. Most AI-generated inventions, ranging from pharmaceutical compounds to structural designs, solve identifiable problems and have clear applications. AI has already been used to design novel antibiotics and optimize microchip architecture.

However, concerns arise in cases where AI output is technically valid but lacks human-understandable justification. Patent offices increasingly require applicants to demonstrate a use-case explanation in human terms, especially when the invention arises from unsupervised or opaque algorithms.

D. JURISDICTIONAL DIVERGENCE

Jurisdiction	Recognition of AI-Generated Inventions	Key Development

[19] USPTO, Rejection of Application No. 15/684,215, *In re DABUS* (2020).
[20] Ryan Abbott, 'Artificial Intelligence, Big Data and the Future of Patent Law' (2021) 57 Houston Law Review 465.

Australia	❌ (Final rejection)	*Commissioner of Patents v Thaler* [2022] FCAFC 62
USA	❌ (no AI as inventor)	Application 15/684,215 rejected; USPTO 2024 guidance
EU	❌ (no AI inventors)	EPO J 8/20 and J 9/20
India	❌	IPO rejected DABUS (App. No. 202017019068)

Although AI-generated inventions are frequently rejected due to inventorship rules, their technical merit is rarely questioned, demonstrating the growing disconnect between technological reality and legal doctrine.

E. POLICY PROPOSALS AND REFORM MODELS

Several policy approaches have been proposed to address the doctrinal tension between AI creativity and existing patent thresholds:

- **Hybrid Inventorship Model**: Recognize a human-AI team, with the human being named co-inventor if they supervised or guided the AI.
- **AI-Invention Classification**: Create a separate legal class for AI-generated inventions with shorter patent terms, higher inventive thresholds, or limited enforceability.
- **Transparency and Disclosure Requirements**: Mandate full disclosure of the AI's role, training data, and human input in the patent filing process.
- **Ethical Utility Tests**: Introduce policy screens to evaluate whether AI-generated inventions align with broader social goals or public interest, particularly in healthcare and environment.

As AI-generated inventions grow more complex and common, global harmonization of patent standards will become increasingly important to prevent jurisdictional arbitrage and ensure legal certainty.

VIII. JUDICIAL AND LEGISLATIVE RESPONSES

JAs AI-generated inventions become more prevalent, courts and legislatures across jurisdictions are grappling with how to adapt traditional patent frameworks to this new frontier. While judicial decisions remain largely consistent in denying AI legal inventorship, legislative bodies and international organizations are beginning to explore reform options. This section outlines the major developments.

A. UNITED KINGDOM

In *Thaler v Comptroller-General of Patents, Designs, and Trade Marks*, the UK Court of Appeal ruled that the Patents Act 1977 requires an inventor to be a natural person.[21] The UK Supreme Court in 2024 upheld this interpretation, affirming that the term "actual deviser of the invention" does not extend to AI systems.

Recognising the evolving role of AI in innovation, the UK Intellectual Property Office (UKIPO) launched public consultations in 2023–24 to evaluate policy options. The consultation highlighted concerns around human attribution, ethical oversight, and potential over-patenting.[22] While no amendments to the Patents Act have yet been made, legislative reform is actively under consideration.

B. UNITED STATES

U.S. courts have uniformly held that AI cannot be an inventor under current patent law. The Federal Circuit's ruling in *Thaler v Vidal* confirmed that **35 U.S.C. s 100(f)** defines an "inventor" as an "individual," meaning a human being.[23]

In February 2024, the USPTO issued the Inventorship Guidance for AI-Assisted Inventions, outlining five principles:

1. Only natural persons may be inventors.
2. Each claim must be attributable to at least one human inventor.
3. Mere ownership or use of AI does not qualify for inventorship.

[21] *Thaler v Comptroller-General of Patents, Designs, and Trade Marks* [2021] EWCA Civ 1374.
[22] UKIPO, *Artificial Intelligence and IP: 2023 Consultation Report* (2024) https://www.gov.uk/government/publicationsaccessed 2 August 2025.
[23] *Thaler v Vidal* 43 F4th 1207 (Fed Cir 2022).

4. Disclosure of AI involvement is encouraged.
5. Determination of inventorship must be assessed claim-by-claim.[24]

These guidelines clarify the USPTO's position while signalling openness to future legislative dialogue.

C. EUROPEAN UNION

The European Patent Office (EPO) maintains that the European Patent Convention (EPC) restricts inventorship to natural persons. In decisions J 8/20 and J 9/20, and in a 2024 reaffirmation, the EPO rejected DABUS applications, citing the legal requirement of human agency.[25]

Meanwhile, the European Commission, under its Intellectual Property Action Plan (2020–2025), has initiated studies on how to adapt IP laws to AI. Proposals include expanding human attribution rules, enhancing transparency, and aligning patent examination guidelines with AI capabilities.[26]

D. INDIA

The Indian Patent Office's 2024 rejection of Application No. 202017019068 emphasized that Sections 2(1)(y) and 6 of the Patents Act 1970 exclude non-human inventors.[27] In response, the Parliamentary Standing Committee on Commerce, in its 161st Report, recommended a detailed review of inventorship provisions in light of emerging AI technologies. It proposed exploring hybrid inventorship models, enhancing examiner training, and adopting ethical guardrails.[28] These recommendations signal India's intent to future-proof its patent regime while balancing innovation incentives with legal clarity.

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[24] USPTO, *Inventorship Guidance for AI-Assisted Inventions* (Feb 2024) https://www.uspto.gov accessed 2 August 2025.
[25] EPO Boards of Appeal, *Thaler/Designation of Inventor* J 8/20 and J 9/20 (21 December 2021); EPO 2024 press note on DABUS rejection.
[26] European Commission, *Intellectual Property Action Plan* COM(2020) 760 final.
[27] Indian Patent Office, Decision on App. No. 202017019068 (3 April 2024).
[28] Parliamentary Standing Committee on Commerce, *161st Report on IPR Regime in India* (2024) paras 6.2–6.9.

E. JAPAN AND SOUTH KOREA

While judicial decisions remain limited, both Japan and South Korea have taken policy-level steps. The Japan Patent Office (JPO) has released white papers assessing whether AI-generated inventions could be integrated within the existing IP framework.[29]

Similarly, the Korea Intellectual Property Office (KIPO) hosted expert panels in 2021–2023 to assess AI inventorship's feasibility. Although both nations continue to require human inventorship, their regulatory openness contrasts with stricter Western approaches.

IX. WIPO AND GLOBAL EFFORTS

The World Intellectual Property Organization (WIPO) convenes regular discussions under its "WIPO Conversation on IP and Frontier Technologies" platform. In its 2024 report, WIPO emphasized the need for global harmonization of rules regarding AI inventorship, citing the risk of forum shopping and legal uncertainty.

Proposals under discussion include:

- Creation of sui generis rights for AI-generated inventions
- Unified disclosure standards
- Ethical assessment frameworks tied to Sustainable Development Goals (SDGs)[30]

WIPO has urged Member States to proactively consider **hybrid inventorship** and **disclosure-based regulation** as interim solutions.

X. ETHICAL CONSIDERATIONS IN AI PATENT LAW

As AI systems become increasingly capable of autonomous innovation, legal discourse must be complemented by ethical scrutiny. Key ethical concerns include the attribution of innovation, the issue of legal agency, conflicts of interest, and the risk of

[29] JPO, *White Paper on AI and Patent Law* (2022) https://www.jpo.go.jp/e accessed 2 August 2025.
[30] WIPO, *Conversation on IP and Frontier Technologies: Fifth Session Report* (June 2024) https://www.wipo.int accessed 2 August 2025.

technological monopolization. These considerations shape not only how the law defines inventorship but also how society values and governs creative contributions in the age of machine intelligence.

XI. ATTRIBUTION AND ACKNOWLEDGMENT

Traditional patent systems are premised on individual attribution—crediting a human inventor for their creativity and ingenuity. However, in AI-assisted or AI-generated inventions, multiple stakeholders contribute: system designers, data curators, algorithmic trainers, and supervising humans.

Ethical models increasingly recommend multi-tiered attribution frameworks, in which contributions are acknowledged at different levels:

- **Primary inventor(s)**: Human agents who conceptualize or validate the invention.
- **AI System Contributor**: Recognized in the technical disclosure, though not granted legal rights.
- **Supporting personnel**: Developers, trainers, and data providers acknowledged for enabling AI functionality.

  For example, the European Commission's Ethics Guidelines for Trustworthy AI suggest that transparency and traceability should include documenting all human and technological inputs.[31] Such attribution frameworks enhance accountability and discourage misappropriation.

XII. AGENCY AND RESPONSIBILITY

Patent law relies on the legal personhood of the inventor, who must be capable of owning, transferring, and being held liable for their intellectual property. AI lacks consciousness, moral intent, and legal agency—raising critical ethical and jurisprudential questions.

Scholars such as Gervais and Abbott have argued that assigning inventorship to AI may produce "moral dissonance", where legal rights are granted without

[31] European Commission, *Ethics Guidelines for Trustworthy AI* (2019) https://digital-strategy.ec.europa.eu accessed 2 August 2025.

corresponding responsibilities.[32] This could erode foundational assumptions of the IP system and lead to a vacuum of accountability, especially in high-risk fields like pharmaceuticals and autonomous vehicles.

XIII. CONFLICTS OF INTEREST AND MONOPOLIZATION

Another major ethical challenge lies in the **potential for monopolistic control**. Corporations with access to powerful proprietary AI systems could dominate patent landscapes, securing a disproportionate share of innovation rights. These risks entrenching technological inequality, particularly in developing economies and smaller firms.

For instance, Alphabet's DeepMind has filed multiple AI-assisted patent applications in drug discovery—raising concerns about whether such concentrated innovation pipelines serve public interest.[33] Ethical regulation may be required to prevent over-patenting, including:

- Limiting the number of patents from a single AI model.
- Implementing competition oversight mechanisms.
- Mandating open data obligations for publicly funded AI systems.

XIV. PUBLIC INTEREST AND ETHICAL OVERSIGHT

Patent rights must be balanced with societal benefit. AI-generated inventions—especially in critical areas like health, climate, and education—should be governed by ethical principles that protect public interest.

Some scholars propose:

- Compulsory licensing for AI-derived essential technologies.
- Ethics review boards for high-impact AI inventions (analogous to Institutional Review Boards in bioethics).

[32] Daniel J Gervais, 'AI and Copyright: Ownership and Originality' (2020) 24(2) Vanderbilt Journal of Entertainment & Technology Law 323.
[33] Marcus Du Sautoy, *The Creativity Code: How AI is Learning to Write, Paint and Think* (Harvard UP 2020) ch

- A requirement that patent applicants disclose whether an AI system contributed to the invention, and if so, how.

These measures align with WIPO's 2024 recommendation for a values-based governance approach to IP in the AI era.[34]

XV. TOWARDS AN ETHICAL FRAMEWORK

A future-oriented patent system should incorporate the following ethical pillars:

1. **Transparency**: Full disclosure of AI involvement, training methods, and human oversight.
2. **Accountability**: Designation of responsible human parties, even in fully autonomous systems.
3. **Equity**: Fair access to patentable technologies and balanced market competition.
4. **Recognition**: Multi-layered attribution systems that respect the collaborative nature of AI innovation.

XVI. CONCLUSION

The integration of artificial intelligence into the invention process presents an unprecedented challenge to the foundational principles of patent law. Current legal frameworks across jurisdictions—rooted in the human-centric model of inventorship—are struggling to accommodate the rise of AI-generated outputs. While courts and patent offices in the United States, United Kingdom, European Union, India, and other major jurisdictions have consistently held that inventors must be natural persons, policy discussions and public consultations indicate growing pressure for reform.

This paper examined two core issues: whether AI systems can be recognised as inventors, and whether AI-generated inventions meet traditional patentability standards. It found that although AI outputs may satisfy criteria like novelty and

[34] WIPO, *Fifth Session Report: Conversation on IP and Frontier Technologies* (2024) https://www.wipo.int accessed 2 August 2025.

utility, the absence of legal personhood and agency prevents AI from fitting into current legal definitions of an inventor. Furthermore, allowing AI to be listed as an inventor without sufficient oversight could create accountability gaps and ethical dilemmas, while risking the monopolisation of innovation.

To address these concerns, this paper proposes the following key reforms:

1. **Hybrid Inventorship Model**: Require at least one identifiable human who significantly contributes to or supervises the AI's inventive process.
2. **AI Disclosure Requirement**: Mandate that all patent applications disclose the role and nature of AI involvement.
3. **New Inventive Step Thresholds**: Adapt the non-obviousness test to account for computational creativity without rewarding trivial algorithmic recombinations.
4. **Ethical Screening and Accountability Mechanisms**: Establish oversight boards and safeguards for high-impact AI-generated inventions.
5. **Global Harmonization of Standards**: Collaborate under WIPO leadership to avoid jurisdictional inconsistencies and legal uncertainty.

As innovation becomes increasingly collaborative between humans and machines, the legal system must evolve to ensure that patent protection continues to incentivize ingenuity, preserve accountability, and serve public interest. Future legal scholarship and policymaking must work toward a balanced framework—one that acknowledges AI's growing role while upholding the ethical and legal foundations of intellectual property law.

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4. *Commissioner of Patents v Thaler* [2022] FCAFC 62 (Full Ct of the Fed Ct of Australia).
5. EPO Boards of Appeal, *Thaler/Designation of Inventor* J 8/20 and J 9/20 (21 December 2021).

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2. UNITED STATES CODE, TITLE 35 S 100(F).
3. INDIAN PATENTS ACT 1970 SS 2(1)(Y), 6.
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