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Email: thelawwaywithelawyers@gmail.com

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Author: Ms. Shofo Nishba

Co-Author: Ms. Anupam Sinha

ARTIFICIAL INTELLIGENCE AND INTELLECTUAL PROPERTY RIGHTS: RECONSIDERING INVENTORSHIP AND AUTHORSHIP

Abstract

The growing use of artificial intelligence in inventive and creative activity is challenging two established foundations of intellectual property law: inventorship in patent law and authorship in copyright law. Traditional IP systems were developed on the assumption that a natural person stands behind every invention and creative work. Modern generative and increasingly autonomous AI systems can now produce technical solutions, visual works, music, and other outputs with varying degrees of human involvement, placing that assumption under pressure. This paper studies the treatment of AI-generated output in major jurisdictions, particularly the United States, United Kingdom, European Union, Australia, South Africa, and India, with particular attention to the DABUS patent disputes and copyright controversies involving Stephen Thaler's Creativity Machine and AI-assisted works such as Zarya of the Dawn. The analysis shows that courts and patent authorities have generally retained a human centred approach. The reasons, however, are primarily grounded in statutory language and the

incentive structure of IP law rather than in a definitive philosophical conclusion about the nature of creativity. The paper considers possible reforms, including graduated disclosure duties, a separate sui generis right for genuinely autonomous AI output, and a threshold based on meaningful human contribution. It ultimately supports a balanced approach that protects the incentive purpose of IP while allowing the legal framework to respond to technological development.

Keywords: Artificial Intelligence, Inventorship, Authorship, Patent Law, Copyright Law, DABUS, Human Authorship, Intellectual Property Reform

1. Introduction

Intellectual property legislation emerged in an era in which human beings were the only recognised agents capable of thinking, designing, and creating. References to an "individual" in patent legislation and the assumption of a human "author" in copyright law attracted little controversy because no realistic alternative existed. That assumption is now being tested. Machine-learning technologies can design functional circuit arrangements, suggest new chemical or pharmaceutical compounds, compose music, and create highly realistic images from limited instructions. Some AI systems function as sophisticated tools directed by people, while systems such as Stephen Thaler's DABUS and Creativity Machine have been presented as capable of generating particular outputs with little direct human control over the final result.

This development creates two connected but separate legal issues. In patent law, the question is whether an entity that is not a natural person can be recognised as an inventor, and how the law should deal with an invention that has been substantially generated by a machine when no human can truthfully claim to have conceived it. In copyright law, the issue is whether an AI-produced work without meaningful human direction can receive protection and, if so, who should hold that protection. At a deeper level, both questions concern whether IP law is intended to reward human intellectual effort itself or primarily to encourage socially valuable outputs that historically depended on human effort.

The central argument of this paper is that current law, most clearly demonstrated by the DABUS patent cases and Thaler v. Perlmutter, continues to require a human inventor and a human author. Courts have generally refused to treat machine agency as sufficient without legislative intervention. Although this settles the immediate disputes, it leaves an institutional question unresolved: whether an incentive-based IP system designed around human creators remains appropriate when software can independently generate commercially significant inventions or expressive works, and what a revised framework should provide in such circumstances.

2. Conceptual Foundations: Purpose of Inventorship and Authorship

Patent protection provides a time-limited exclusive right in return for disclosure of a technical invention. Inventorship identifies the person responsible for the inventive contribution and is legally distinct from ownership. Incorrect identification of the inventor can have serious consequences, including possible invalidity, while patent systems commonly require an oath or

declaration from a natural person. The concept of conception—the mental formulation of a definite and complete invention—has traditionally been treated as central to inventorship and understood as a human mental act.

Copyright law operates on a related but distinct basis. It protects original expression once fixed in an appropriate form and is principally intended to encourage the production and dissemination of creative works. Authorship identifies the original expressive contribution that is protected. In United States law, human authorship has long been regarded as implicit in constitutional and statutory language. This understanding has also appeared outside the AI context, including cases concerning works produced without human creative control, such as the macaque photograph dispute, where a non-human creator was held outside the statutory concept of an author.

Both doctrines therefore perform an allocation function: they assign rights and legal responsibilities to persons rather than simply recognising that a valuable output exists. AI generated inventions and works are disruptive because they can displace the human at the very stage that these doctrines were designed to identify. When a person uses software to assist in drafting a circuit, the human remains the conceiving mind. When a system independently determines the configuration, however, the traditional location of human inventive or creative

agency becomes less clear.

3. Artificial Intelligence and Patent Inventorship: The DABUS Litigation

The DABUS disputes provide the most prominent international test of AI inventorship. Computer scientist Stephen Thaler filed patent applications in numerous jurisdictions and identified his DABUS system—described as the Device for the Autonomous Bootstrapping of Unified Sentience—as the sole inventor. The claimed outputs included a food container designed for efficient robotic stacking and a light beacon intended to attract attention in search-and-rescue situations. Thaler did not identify himself as inventor; instead, he based his claim to the resulting rights on his ownership of the machine.

In the United States, the USPTO rejected the applications because they did not identify a valid inventor. The District Court for the Eastern District of Virginia upheld that position, followed by the Federal Circuit in Thaler v. Vidal (2022). The appellate court relied principally on statutory wording. The Patent Act uses the term "individual" for the inventor and contains personal references such as "himself" and "herself," which the court considered sufficient to limit

inventorship to natural persons. The court did not accept the invitation to resolve the broader policy argument that AI inventorship might advance the constitutional objective of promoting useful arts, stating that such a change was for Congress. The Supreme Court declined review in 2023. Later USPTO guidance, including the November 2025 update, continued to recognise only natural persons as inventors while clarifying that a human may qualify where that person makes a significant contribution to an AI-assisted invention.

The United Kingdom reached a comparable result. The UK Intellectual Property Office rejected Thaler's applications because DABUS was not a "person" under the Patents Act 1977, and the UK Supreme Court upheld that conclusion in December 2023. The court also indicated that a human who employs AI as a sophisticated tool may still be recognised as the inventor. The European Patent Office likewise rejected the DABUS approach, reasoning that an inventor must possess legal personality, which an AI system does not have.

Australia initially differed. In 2021, the Federal Court treated "inventor" as an agent noun that could potentially describe a person or a thing and therefore accepted DABUS as an inventor. The decision was later reversed on appeal, bringing Australia back toward the prevailing international position. South Africa presents another unusual example: because its patent system

does not substantively examine applications in the same way and its statute does not clearly define inventor, a DABUS patent was granted. That grant is generally understood as arising from a procedural and statutory gap rather than from a fully developed policy decision recognising AI as an inventor.

India has not yet produced a definitive judicial decision on AI inventorship, although a DABUS application was filed before the Indian Patent Office. The Patents Act, 1970 uses concepts that generally point toward natural-person inventorship, so many commentators expect India to align with the international majority. Nevertheless, the absence of a directly tested judicial question means the position remains formally unsettled. Legislative clarification may therefore provide greater certainty than case-by-case litigation.

4. Artificial Intelligence and Copyright Authorship: The Human Authorship Requirement

Copyright disputes involving Stephen Thaler have raised a parallel issue. His Creativity Machine generated an artwork titled "A Recent Entrance to Paradise," which he submitted for registration while identifying the machine as the author and himself as the claimant. The United

States Copyright Office refused registration, maintaining that copyright protection requires a work to originate with a human being. Thaler argued that provisions permitting anonymous and pseudonymous authors showed that a human author need not always be identified, but that argument did not establish that a work can have no human author at all. In March 2025, the D.C. Circuit affirmed the refusal in Thaler v. Perlmutter, holding that the Copyright Act requires original works of authorship to originate with a human creator. The court also rejected the attempt to rely on the work-made-for-hire doctrine by treating the Creativity Machine as an employee. The Supreme Court declined review in March 2026.

A separate issue concerns works created through substantial human interaction with generative AI. The Copyright Office's treatment of Zarya of the Dawn illustrates the distinction. Merely entering prompts may not provide sufficient creative control because the precise output generated by an AI system cannot necessarily be predicted or controlled by the user. By contrast, human selection, arrangement, editing, and other creative modifications can support protection for the human-authored elements of a final work. Litigation such as Allen v. Perlmutter, involving extensive iterative prompting, may further clarify how much human creative control is

necessary.

The patent and copyright cases therefore display a common doctrinal pattern. Both fields presently retain a human-origin requirement, and courts have generally located that requirement in statutory language rather than treating it as an unchangeable constitutional rule. Courts have also emphasised that legislatures remain capable of creating protection for machine-generated output if they consider such protection desirable. What courts have resisted is the judicial creation of an entirely new category through interpretation alone.

5. Comparative Snapshot: Divergence Beneath an Apparent Consensus

The jurisdictions considered in this paper agree more strongly on the result than on the reasoning. The United States and United Kingdom place considerable weight on statutory wording, including the meaning of "individual" and the use of personal pronouns. The European Patent Office focuses on legal personality and the ability to hold and transfer rights. Australia's original DABUS decision demonstrated that a functional reading of the term "inventor" could lead in another direction, although the appellate outcome ultimately reversed it.

The more difficult contemporary question is not whether an AI system can simply be declared the inventor or author, but how much human participation is sufficient when AI is used

as a tool. The updated USPTO guidance and the UK Supreme Court's DABUS decision leave room for human inventorship where the person meaningfully directs, selects, or develops the result. Similar reasoning appears in copyright practice. The unresolved boundary is therefore between a user who exercises genuine intellectual direction and a person whose involvement is limited to initiating a largely autonomous machine process.

India occupies an especially significant position because it has not yet decided an identical case. The Patents Act, 1970 and Copyright Act, 1957 predate generative AI, and the ultimate interpretation of their personhood-related concepts cannot be predicted with certainty merely from foreign decisions. In light of India's interest in AI research and development, clear legislative policy could offer a more stable solution than prolonged litigation.

6. Doctrinal and Policy Tensions

Human inventorship and authorship are often defended through incentive theory. IP protection is intended to encourage people to invent and create by offering a period of

exclusivity, while an AI system itself does not require an economic reward to generate output. The reasoning adopted in Thaler v. Perlmutter reflects this position: refusing copyright for completely autonomous machine output does not remove the incentive available to human creators who use AI as an assistive technology and claim rights over their own creative contribution.

Yet this explanation becomes more complicated when viewed from the perspective of businesses investing heavily in AI systems. Pharmaceutical companies, semiconductor firms, and other organisations may spend substantial resources building AI-based discovery systems. If the resulting output receives no form of exclusivity merely because the final inventive contribution was generated autonomously, competitors may be able to copy that output. Although denying protection may not reduce the motivation to create a particular work or invention, it may weaken incentives to invest in the technological infrastructure that produces large numbers of such outputs.

A second problem is evidentiary. Determining the respective contributions of a human and an AI model can be difficult, particularly when the model's internal processes are not readily interpretable. This uncertainty may encourage applicants to exaggerate the extent of their human participation. Regulators have begun responding through disclosure expectations, including USPTO guidance concerning material AI involvement in an inventive process.

A third concern is connected to attribution and integrity. Inventorship and authorship are not merely mechanisms for obtaining exclusive rights; they also communicate recognition and responsibility. Refusing to recognise an AI system preserves the human-centred structure of IP categories, but it can create another problem if a human is credited as the inventor or author despite not having conceived the relevant technical or expressive features. Disclosure requirements address only part of this attribution problem.

7. Rethinking the Framework: Reform Pathways

Because courts have largely treated the human-centred rule as a consequence of existing statutes rather than as an immutable constitutional requirement, future reform is more appropriately pursued through legislation and regulation. Several possible approaches can be considered.

First, a graduated disclosure system could require patent and copyright applicants to

describe the role played by AI in producing the claimed invention or work. Such a requirement would not automatically determine who qualifies as inventor or author, but it would create a clearer evidentiary record and discourage unsupported assertions that an output was entirely human-generated.

Second, law could adopt a threshold for "meaningful human contribution." The purpose would be to avoid both extremes: accepting any negligible human involvement as enough, or demanding that every part of a protected result be manually produced. The test could examine whether the person exercised genuine judgment over the technical problem or expressive result rather than simply starting an AI process and accepting its output. The distinction between assistive and generative use already developing in copyright practice could provide a foundation, with appropriate modifications for patent law.

Third, lawmakers could establish a limited sui generis right for genuinely autonomous AI output. Such protection would be separate from ordinary patent and copyright rights and could resemble existing specialised regimes such as database or semiconductor topography protection. The right might be assigned to the developer or operator, have a shorter duration, and reflect the weaker moral justification for exclusivity. This could preserve incentives to invest in AI innovation without redefining the established legal meanings of inventor and author.

Fourth, ownership should remain conceptually separate from inventorship and authorship. Even if AI makes a substantial contribution to an output, the law could allocate an economic

interest to an appropriate human or corporate entity through employment, commissioning, contractual arrangements, or ownership of the AI system without inaccurately naming that entity as the inventor or author.

Finally, international coordination is important because AI-generated inventions and creative works can cross borders easily. Divergent national rules may encourage forum shopping, as illustrated by the filing of DABUS applications in multiple jurisdictions. Cooperation through the World Intellectual Property Organization or other harmonisation mechanisms could reduce incentives to seek protection in jurisdictions where permissive treatment results mainly from uncertainty or procedural gaps.

8. Conclusion

The DABUS and Thaler disputes have clarified the present position of patent and copyright

law: both systems remain strongly centred on human inventorship and human authorship, and courts generally regard any expansion to machine-generated output as a matter for legislatures. From a statutory perspective, this position preserves the coherence of IP categories that have historically been tied to human intellectual agency. It nevertheless leaves an important policy issue unresolved. AI systems can now produce commercially valuable inventions and creative material with comparatively little human direction, challenging an incentive model that was developed around human creation.

A durable legal response may therefore require a combination of reforms. Greater disclosure of AI involvement, a practical standard for meaningful human contribution, and a limited sui generis right for output that genuinely has no qualifying human contributor could work together. Such a model would not require abandoning human inventorship or authorship. Instead, it would place a narrower additional category alongside those doctrines to address forms of AI-generated output that traditional IP law was never designed to classify.

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