




# Ownership of AI-Generated Outputs and Their Implications for Traditional Intellectual Property Rules

Hadjab Ali<sup>\*1</sup>  and Laouar Badra<sup>2</sup>

<sup>1</sup> Mohamed Khaider University of Biskra, Laboratory: Rights and Freedoms in Comparative Systems, Business Law Department, Faculty of Law and Political Science, Algeria  
<sup>\*</sup> ali.hadjab@univ-biskra.dz

<sup>2</sup> Mohamed Khaider University of Biskra, Laboratory: Rights and Freedoms in Comparative Systems, Faculty of Law and Political Science, Algeria  
a.laouar@univ-biskra.dz

**Abstract:** This article provides a comprehensive analysis of the challenges facing traditional legal frameworks of intellectual property in light of the rapid development of generative artificial intelligence systems. It highlights the inadequacy of the concepts of originality and human authorship in accommodating the outputs of these systems and reviews recent judicial examples and administrative decisions that confirm the current laws were not designed to frame the creative works produced by machines. The research seeks to propose alternative regulatory mechanisms and legislative solutions to reshape the legal frameworks, including standards for ownership ratios based on the degree of human intervention, mandatory licences for training data, and conditional protection for human-supported outputs. The research ends by asking for a fair global law system that supports new ideas while also protecting rights, suggesting clear and straightforward rules to make sure generative artificial intelligence systems are managed ethically and transparently.

**Keywords:** generative artificial intelligence, intellectual property, copyright, patents, human intervention, legislative framework, AI regulation.

## 1. Introduction

Generative artificial intelligence systems are experiencing rapid integration across various technical and creative fields, which poses a significant challenge to traditional intellectual property rules. The outputs produced by these systems, whether they are literary texts, artistic images, musical compositions, or even software innovations, put the fundamental concepts of this system—based on the conditions of human creativity and originality—under scrutiny for legislative, judicial, and juristic re-evaluation and adaptation. This is within the framework of the ongoing debate regarding the ownership of these outputs on one hand and the identity of their author and inventor on the other, under effective legal protection.

This leads us to pose the research question regarding the extent to which traditional intellectual property laws can accommodate the outputs of generative artificial intelligence systems in terms of ownership and protection for their creators?

© The Author(s) 2026

D. Agti et al. (eds.), *Proceedings of the International Conference on Artificial Intelligence Applications in Business Administration in MENA Region (ICAIBA 2026)*, Advances in Economics, Business and Management Research 393,

[https://doi.org/10.2991/978-94-6239-711-8\\_41](https://doi.org/10.2991/978-94-6239-711-8_41)

This issue presents us with several research hypotheses: The clear shortcomings revealed by the outputs of generative artificial intelligence systems in the concepts of originality and human authorship rooted in the traditional rules of intellectual property.

This ownership can be attributed to the user and developer (the contributor) based on the degree of intervention within the framework of fair use. This matter requires a comprehensive legislative framework, both locally and internationally, based on licenses and conditional protection for human-supported outputs.

Previous studies conducted by researchers such as Christoph Wach and Kong Dwan Duong [1] significant concerns regarding the ethical and social risks of generative artificial intelligence, emphasising the inadequacy of proposed solutions and focusing on analysing risk elements to develop effective countermeasures. These studies also pointed out unaddressed technical challenges in large language models and safety concerns associated with them. These researches also highlight, as in a study conducted by Yvonne Nyaboke [2], how artificial intelligence has transformed creative sectors, raising complex challenges for copyright law regarding authorship, originality, and moral rights of works created by artificial intelligence. This reveals an international disparity in how to handle AI-generated content, as many current intellectual property laws require a human element, excluding this content from protection. These studies also emphasise the urgent need for legal adaptation and international collaboration to establish balanced regulatory frameworks that protect intellectual property rights and promote innovation.

In this study, I relied on an analytical method with a critical approach to numerous legislative texts and judicial rulings in leading European and American legislations in this field, alongside the guidelines of the World Intellectual Property Organization (WIPO).

This study requires a research plan consisting of two main sections; the first includes analysing the limits of traditional intellectual property laws in accommodating the outputs of generative artificial intelligence systems, while the second proposes a set of solutions and regulatory mechanisms.

## **2. The limitations of traditional intellectual property laws in accommodating the outputs of generative artificial intelligence systems**

In this section, we address the field of copyright from the perspective of the concepts of authorship and originality, and the issue of attributing automatically generated works while excluding protection in the absence of direct human involvement. We also discuss the field of patents and innovations, with the issue of excluding artificial intelligence as an inventor, to highlight the shortcomings of the traditional framework.

## 2.1 Copyright and Originality in the Face of Automated Outputs

Copyrights form the cornerstone of the traditional intellectual property system, relying on the idea of direct human creativity and personal originality as conditions for protection and ownership. For example, the U.S. Copyright Act of 1976 [3] defines the author as a literary or artistic work resulting from human effort, while the European Union's [4] requires originality that reflects the author's personality. This makes these concepts falter in the face of generative artificial intelligence outputs produced by algorithms trained on vast datasets without direct human intervention in the creative process [5].

The U.S. Copyright Office confirmed in its 2025 report that works resulting solely from inputting instructions into AI tools do not deserve protection as they do not meet the requirement of human authorship[6]. Meanwhile, the U.S. Court of Appeals issued a ruling in 2025 rejecting the registration of a work produced by the Creativity Machine in the case of *Thaler v. Perlmutter*, which became famous for the "DABIS" case [7] confirmed that the law requires a human author and that the machine is merely a tool[8]. Based on this, a distinction was made between works generated purely by artificial intelligence, which are not granted legal protection, and those that involve human intervention and contribution, which do receive such protection.

On the European level, there is a greater focus on the legality of using protected works during the training phase and respecting the rights of their owners, even if the automated outputs themselves are not protected. The case of OpenAI[9] In front of a German court in 2025, regarding a lawsuit filed by the Musicians' Rights Association, the issue of direct copyright infringement when using protected works as training data for models like ChatGPT and DALL-E was raised. The ruling stated that this process constitutes reproduction and distribution, and that OpenAI violated copyright by storing and reproducing the lyrics of protected songs in its AI models without a license[10] which is contrary to European law on the Directive on Copyright in the Information Society[11].

In this context, we must clarify an important topic; the author in the traditional meaning refers to the person who created the original work and is its owner, which does not pose concerns of attribution and legal protection for it[12]. This differs from the owner, as the latter may be a personal or legal person who has the financial rights through exploitation, publication, licensing, and sale without being the author of the work. This is the essence of the legal dilemma created by the outputs of artificial intelligence.

From the above, we conclude that traditional rules are not designed to accommodate automated outputs at all stages of ownership and protection. This all hinges on the necessity of sufficient human intervention without a precise definition of the extent of this intervention, which adds ambiguity that may expose creativity to leakage and unlawful exploitation.

This difference between the American and European sides necessitates a redefinition of the concepts of "originality and repetition" to include all supported mechanical elements, along with setting objective standards to measure the extent of human intervention and delineate the boundaries for using training data.

## **2.2 Patents and Innovations in the Face of Inventive Artificial Intelligence**

Patents form a cornerstone of the traditional intellectual property system, as they are based on two essential conditions: "novelty and inventiveness," with the requirement that the inventor be a natural person capable of understanding and disclosing their invention.

The American patent law 35 U.S.C. 100(f) [13] Explicitly states in Section 35 the requirement that the inventor must be a natural person, while the European Union demands in Article 81 of the European Patent Convention (EPC) a "real" name of a human inventor in the patent application [14]

This sharply contrasts with generative artificial intelligence systems that produce complex technological innovations through machine learning algorithms without direct human intervention in shaping the final outcome.

These positions also align with the recommendations of the World Intellectual Property Organization for the human overseer of the system, not the system itself [15] This confirms that creative value does not lie solely in algorithmic complexity, but extends to conceptual depth and cultural significance [16], which reaffirms the centrality of the human factor in the innovation process. The issue lies in the fact that current liability laws do not adequately cover intellectual property issues in the context of artificial intelligence, necessitating legislative intervention to address these gaps.

## **3. Solutions and Regulatory Mechanisms**

This section focuses on solutions derived from judicial and doctrinal trends to address the mentioned shortcomings, with the aim of formulating a more effective legal framework.

### **3.1 Attribution of rights based on the degree of human participation**

The allocation of property rights for AI outputs is assumed to be based on the degree of human intervention, meaning that rights should be attributed to users or developers based on the minimum human inputs [17], where judicial victories for AI companies like Meta and Anthropic in "fair use" lawsuits [18] Regarding the determination of whether the use of copyrighted materials to train AI models constitutes a copyright infringement or falls under the fair use principle, these lawsuits, such as the case of *Kadrey v. Meta* and other cases against Anthropic, are based on the argument of AI companies that the training process is a "transformative" process that does not directly reproduce the original works.

Rather, it is used to enable artificial intelligence to generate new content, akin to learning a language through reading texts. Although many of these lawsuits are still in their early stages, the arguments presented indicate that AI companies seek to establish a principle allowing them to use data extensively to support innovation.

while copyright holders view this as an infringement on their intellectual property rights[18]. This makes it more difficult for copyright law to interact with AI-generated outputs, creating legal disputes over ownership and fair use in the context of AI training. As a result, it is necessary to establish precise criteria to evaluate human intervention.

### **3.2 Regulation of Training Data and Conditional Protection**

Alternative regulatory mechanisms for AI training data impose the necessity of mandatory licensing for protected data to achieve a balance between innovation and rights protection. They propose mandatory licensing for protected datasets used by AI. Additionally, the proposed legal framework should include special protection categories for human-supported outputs, as seen in the EU AI Act, which aims to ensure human oversight in high-risk AI systems supported by the General Data Protection Regulation (GDPR) [19]. To form a comprehensive and coordinated legal framework.

These guidelines encourage the use of privacy-enhancing technologies to protect user data while disclosing AI-generated content, ensuring compliance with ethical and legal standards in data collection, sharing, and model training[20], as well as promoting transparency in AI data training.

### **3.3 Towards a Balanced Global Legislative Framework**

This study demonstrates an immediate necessity to create a balanced global legislative framework that harmonises the promotion of technological innovation with the safeguarding of existing intellectual property rights, alongside recommendations for formulating objective and transparent standards. Recent trends in the courts and in legal doctrine have moved away from traditional protective approaches to intellectual property and toward more balanced frameworks that put social access and innovation in AI first. The reforms suggest moving away from exclusive property rights and toward liability systems that fairly pay creators for their work [21].

These proposals should also follow the rules set out in the EU AI Act, which is a big step toward regulating this technology. These frameworks should also require licenses for training data and conditional protection for AI outputs that are supported by humans. They should also assign ownership rights based on how much humans are involved [22]. This aims to enhance ethical, transparent, and responsible governance of artificial intelligence, ensuring that technological developments in this field are responsible and sustainable.

This study also recommends developing new copyright laws to clarify the actual authorship of artificial intelligence and to determine the originality of AI-generated content based on the minimum level of creativity at the expression level. It is suggested to allocate copyright for AI-generated content to the owner of the artificial intelligence through legislative text, allowing for contractual flexibility for the concerned parties. The application of such standards will contribute to building an intellectual property system capable of keeping pace with rapid technological developments and achieving the desired balance between innovation and protection.

## 4. Conclusion

This study underscored the considerable difficulties presented by generative artificial intelligence to current intellectual property legal frameworks, which were not intended to accommodate non-human creations. Our analyses indicated that conventional notions such as "originality" and "authorship" require a fundamental redefinition to include AI-generated outputs. Given this problem, the following results and suggestions provide useful solutions and strategic guidance.

## 5. Results

**Problems with current legal systems:** Recent judicial and administrative cases show that the rules we have now are not enough to protect or control the works of art and literature made by AI systems. This has created a legal vacuum and a state of uncertainty.

**There is no clear definition of originality when it comes to artificial intelligence:** As of now, there is no clear legal definition of "originality" that can be used for works made by AI. This makes it hard to figure out who owns the intellectual property rights to those works.

**The impact of human intervention:** According to the research, a key factor in determining intellectual property rights should be the extent of human intervention in the AI creation process. This is because works that necessitate substantial human effort in design or guidance should be given more protection.

## 6. Recommendations

**Rebuilding the intellectual property laws in light of the developments in artificial intelligence:** A careful examination of the traditional intellectual property laws is necessary in order to modify the concepts of originality, authorship, and innovation to the nature of outputs generated by artificial intelligence. This should be achieved by using explicit legal language that eliminates the existing ambiguity and closes the legislative gap brought about by this technology.

**Establishing the criterion of human intervention as a legal basis for determining ownership and protection:** By adopting a graduated protection system that differentiates between outputs that are entirely automated and those that show significant human contribution, the degree of human intervention is recognised as a decisive criterion in assigning rights and determining legal protection. This ensures the fairness of legal adaptation and its suitability to each output's nature.

**Setting up a balanced system of rules for training data on a national and international level:** by making clear and effective legal ways to control the use of data and protected works in training AI systems, in a way that protects the rights of the original owners while also encouraging technological progress, all within a framework of openness, good governance, and international cooperation.

## References

- [1] K. Wach *et al.*, ‘The dark side of generative artificial intelligence: A critical analysis of controversies and risks of ChatGPT’, *Entrepreneurial Business and Economics Review*, vol. 11, no. 2, pp. 7–30, Jun. 2023, doi: 10.15678/EBER.2023.110201.
- [2] Y. Nyaboke, ‘Intellectual Property Rights in the Era of Artificial Intelligence’, *Journal of Modern Law and Policy*, vol. 4, no. 2, pp. 57–72, Aug. 2024, doi: 10.47941/jmlp.2162.
- [3] United States: Congress: House of Representatives: Office of the Law Revision Counsel, ‘Subject matter of copyright: In general. Sec. 102’, in *COPYRIGHTS. Title 17*, 2023rd edn, U.S. Government Publishing Office, 2023. Accessed: Jan. 12, 2026. [Online]. Available: <https://www.govinfo.gov/app/details/USCODE-2023-title17/USCODE-2023-title17-chap1-sec102>
- [4] *Directive 2001/29/EC of the European Parliament and of the Council of 22 May 2001 on the harmonisation of certain aspects of copyright and related rights in the information society*, vol. 167. 2001. Accessed: Jan. 12, 2026. [Online]. Available: <http://data.europa.eu/eli/dir/2001/29/oj>
- [5] chrisdh79, ‘US Copyright Office rules out copyright for AI created content without human input | AI-assisted editing is allowed, but AI-generated images are not’, *r/Futurology*. Accessed: Jan. 12, 2026. [Online]. Available: [https://www.reddit.com/r/Futurology/comments/1if79iv/us\\_copyright\\_of-fice\\_rules\\_out\\_copyright\\_for\\_ai/](https://www.reddit.com/r/Futurology/comments/1if79iv/us_copyright_of-fice_rules_out_copyright_for_ai/)
- [6] ‘Copyright and Artificial Intelligence | U.S. Copyright Office’. Accessed: Jan. 12, 2026. [Online]. Available: <https://www.copyright.gov/ai/>
- [7] TheQuarantinian, ‘Thaler v Perlmutter. DC District rules that AI created works are not eligible for copyright protection. Plaintiff indicates he will appeal.’, *r/supremecourt*. Accessed: Jan. 12, 2026. [Online]. Available: [https://www.reddit.com/r/supremecourt/comments/15x2fpk/thaler\\_v\\_perlmutter\\_dc\\_district\\_rules\\_that\\_ai/](https://www.reddit.com/r/supremecourt/comments/15x2fpk/thaler_v_perlmutter_dc_district_rules_that_ai/)
- [8] ‘Thaler v. Perlmutter – Copyright Act Requires Authors to be Human – Trepanier MacGillis Battina P.A. | Minnesota Business Law Firm’. Accessed: Jan. 12, 2026. [Online]. Available: <https://trepanierlaw.com/thaler-v-perlmutter/>
- [9] ‘GEMA vs. OpenAI: Landmark ruling on AI language models and copyright law’. Accessed: Jan. 12, 2026. [Online]. Available: <https://www.heuking.de/en/news-events/newsletter-articles/detail/gema-vs-openai-landmark-ruling-on-ai-language-models-and-copyright-law.html>
- [10] ‘GEMA vs. OpenAI: Munich Regional Court I issues landmark copyright decision’. Accessed: Jan. 12, 2026. [Online]. Available: <https://cms-lawnow.com/en/ealerts/2025/12/gema-vs.-openai-munich-regional-court-i-issues-landmark-copyright-decision>
- [11] ‘EUR-Lex - 32001L0029 - EN’, Official Journal L 167 , 22/06/2001 P. 0010 - 0019; Accessed: Jan. 12, 2026. [Online]. Available: <https://eur-lex.europa.eu/eli/dir/2001/29/oj/eng>
- [12] ‘Definitions (FAQ) | U.S. Copyright Office’. Accessed: Mar. 14, 2026. [Online]. Available: <https://www.copyright.gov/help/faq/faq-definitions.html>

- [13] ‘35 U.S. Code § 115 - Inventor’s oath or declaration’, LII / Legal Information Institute. Accessed: Jan. 13, 2026. [Online]. Available: <https://www.law.cornell.edu/uscode/text/35/115>
- [14] ‘Article 81 – Designation of the inventor’. Accessed: Jan. 13, 2026. [Online]. Available: <https://www.epo.org/en/legal/epc/2020/a81.html>
- [15] ‘IP and Frontier Technologies’, frontier-technologies. Accessed: Jan. 13, 2026. [Online]. Available: <https://www.wipo.int/en/web/frontier-technologies/artificial-intelligence/index>
- [16] A. Skoryk, I. Antipina, O. Havrosh, Y. Shunevych, and V. Shvets, ‘Machine Thinking and Human Imagination: New Horizons for Creativity in the Digital Age’, *International Journal on Culture, History, and Religion*, vol. 7, no. S11, pp. 115–139, Jul. 2025, doi: 10.63931/ijchr.v7iS11.156.
- [17] M. Z. Karimullah, R. W. Putri, and R. Rohaini, ‘Hak Cipta atas Hasil Tulisan Kecerdasan Artifisial: Tinjauan Etika Kekayaan Intelektual dan Status Kepemilikannya’, *AKADEMIK: Jurnal Mahasiswa Humanis*, vol. 5, no. 2, pp. 1079–1094, May 2025, doi: 10.37481/jmh.v5i2.1449.
- [18] ‘Hype, Sustainability, and the Price of the Bigger-is-Better Paradigm in AI | Proceedings of the 2025 ACM Conference on Fairness, Accountability, and Transparency’, ACM Conferences. Accessed: Feb. 02, 2026. [Online]. Available: <https://dl.acm.org/doi/10.1145/3715275.3732006>
- [19] C. Sarra, ‘Artificial Intelligence in Decision-making: A Test of Consistency between the “EU AI Act” and the “General Data Protection Regulation”’, *AJL*, vol. 11, no. 1, pp. 45–62, Jan. 2025, doi: 10.30958/ajl.11-1-3.
- [20] ‘Artificial intelligence networks for assessing the prognosis of gastrointestinal cancer to immunotherapy based on genetic mutation features: a systematic review and meta-analysis | BMC Gastroenterology | Springer Nature Link’. Accessed: Feb. 02, 2026. [Online]. Available: <https://link.springer.com/article/10.1186/s12876-025-03884-1>
- [21] G. Ghidini, ‘Diverging Approaches to Intellectual Property and a Reform Proposal Prompted by AI’, *GRUR Int*, vol. 74, no. 5, pp. 416–429, May 2025, doi: 10.1093/grurint/ikaf026.
- [22] Y. Lu, ‘Reforming Copyright Law for AI-Generated Content: Copyright Protection, Authorship and Ownership’, *Technology and Regulation*, vol. 2025, pp. 81–95, May 2025, doi: 10.71265/chkr8w30.

**Open Access** This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

