AI and Intellectual Property Law in the Digital Age: Creating a Cohesive Global System for Ethical Innovation and Societal Benefit

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Abstract

This article analyzes the imperative of reevaluating and synchronizing international intellectual property (IP) frameworks considering the disruptive impact of artificial intelligence (AI) on innovation. AI-generated products increasingly contest conventional notions of authorship and inventorship, which have traditionally centered on human creators. Current inconsistencies in national and regional intellectual property regulations do not adequately address the intricacies of AI-driven innovation, leading to regulatory voids that compromise legal clarity and security for inventors and investors. Divergences in intellectual property protection legislation across countries impede international cooperation and equitable access to technology, engendering ethical and social dilemmas regarding ownership, accountability, and the economic concentration of AI-generated intellectual property. This article promotes the establishment of a universally standardized intellectual property framework that acknowledges AI-generated contributions while safeguarding human innovation. Principal proposals encompass novel classifications for AI-assisted inventions, established criteria for inventorship, and fair allocation of economic and creative benefits. The discourse highlights ethical considerations including justice, transparency, and the societal advantages resulting from AI-driven innovations. An integrated and inclusive intellectual property governance framework is crucial for facilitating equitable global growth in the AI-driven economy, while protecting the rights of current stakeholders and encouraging technological and social advancement.

Introduction

The swift advancement of artificial intelligence (AI) is fundamentally reshaping the landscape of creativity and innovation, challenging conventional intellectual property (IP) frameworks that have long been centered on human inventors and creators.[1] Sophisticated AI systems, capable of autonomously generating inventions, artworks, and other intellectual outputs, blur the traditional boundaries of authorship, inventorship, and ownership.[2] These systems are no longer passive tools but active contributors to innovation, raising complex questions about how to attribute rights to their outputs. While the transformative potential of AI-driven innovation is immense, it exposes critical deficiencies in existing IP regulations, which often fail to account for the realities of machine-generated creativity and this regulatory mismatch creates legal ambiguities, impedes cross-border collaboration, and intensifies ethical dilemmas surrounding accountability, economic concentration, and equitable access to technology.[3]

The gaps in current IP frameworks present significant challenges for global governance, as divergent national and regional approaches exacerbate inconsistencies and foster regulatory fragmentation.[4] Without a unified strategy, stakeholders face uncertainty regarding the protection and enforcement of rights for AI-generated outputs, disincentivizing investment and stifling

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[1] SINGH, M. THE IMPACT OF ARTIFICIAL INTELLIGENCE ON INTELLECTUAL PROPERTY RIGHTS IN THE LEGAL PERSPECTIVE.

[2] Ballardini, R. M., He, K., & Roos, T. (2019). AI-generated content: authorship and inventorship in the age of artificial intelligence. In *Online Distribution of Content in the EU* (pp. 117-135). Edward Elgar Publishing.1128

[3] Mbah, G. O. (2024). The Role of Artificial Intelligence in Shaping Future Intellectual Property Law and Policy: Regulatory Challenges and Ethical Considerations. *Journal homepage: www. ijrpr. com ISSN*, *2582*, 7421.

[4] Mihus, I., Zahorskyi, V., & Lipentsev, A. (2024). NAVIGATION IN E-GOVERNMENT: THE ROLE OF ARTIFICIAL INTELLIGENCE IN THE FORMATION OF THE LEGAL FRAMEWORK FOR THE PROTECTION OF INTELLECTUAL PROPERTY RIGHTS. *Public Administration and Law Review*, (3 (19)), 17-34.

innovation.[5] Furthermore, the absence of clear legal recognition for the contributions of AI systems complicates accountability and risks concentrating IP rights in the hands of a few dominant entities, deepening global inequities.[6] These challenges underscore the urgent need to modernize IP law to reflect the evolving dynamics of AI-driven innovation while fostering ethical and inclusive practices. This essay examines the transformative implications of AI for global IP law, emphasizing the need for harmonized frameworks to address these emerging challenges. By analyzing the European Union's Artificial Intelligence Act (EU AI Act), this discussion explores how adaptive and inclusive AI regulatory models can mitigate legal ambiguities and promote equitable access to AI-driven benefits.[7] The integration of innovative legal mechanisms, such as hybrid inventorship paradigms and AI-specific IP classifications, into global IP governance to foster innovation, enhance legal clarity, and ensure ethical and sustainable development in an increasingly AI-driven world.[8]

Revolutionizing Innovation: The Evolution of AI Creativity and Its Impact on IP Law

Since Ada Lovelace's doubts about a computer's creativity, invention has grappled with machine creativity.[9] A century later, Alan Turing proved that machines could amaze and inspire.[10] We must reassess intellectual property frameworks to address the complexities of AI-driven innovation.[11] Advanced algorithms and artistic elements in AI-generated works challenge intellectual property laws' authorship and ownership concepts.[12] AI's cost-effective content creation is changing publishing, music, and film while changing economic dynamics.[13] The intellectual property framework for human inventors and creators struggles to accommodate autonomous machine-generated creation.[14] Cloud computing, the Internet of Things, 5G, and edge devices enable AI systems to analyze large datasets, evaluate in real time, and support autonomous functions.[15]

Navigating Intellectual Property Challenges in the Age of Artificial Intelligence

Artificial Intelligence and Patents

The intersection of AI and patent law raises profound questions about the foundational principles of inventorship, novelty, and non-obviousness. Conventional patent law presumes that

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[5] Kop, M. (2019). AI & intellectual property: Towards an articulated public domain. *Tex. Intell. Prop. LJ*, *28*, 297.

[6] Saidakhrarovich, G. S., Hoeren, T., Gulyamov, S., Rustambekov, I., Zolea, S., Juchniewicz, E., ... & Rodionov, A. Democratizing Innovations: A New Perspective on Intellectual Property to Advance Social Justice in the Age of Ai. *Available at SSRN 4826900*.

[7] Butt, J. (2024). Analytical Study of the World's First EU Artificial Intelligence (AI) Act. *International Journal of Research and Publications*, *5*(3).

[8] Oğul, S. (2025). Intellectual Property in the Age of Machine Creativity: Understanding the Legal Landscape and Emerging Issues. In *Understanding Generative AI in a Cultural Context: Artificial Myths and Human Realities* (pp. 333-358). IGI Global Scientific Publishing.

[9] Aiello, L. C. (2016). The multifaceted impact of Ada Lovelace in the digital age. *Artificial Intelligence*, *235*, 58-62.

[10] Walsh, T., & George, A. (2022, December 13). *Can machines invent things? AI reveals the answer is 'yes'*. UNSW Sydney. https://www.unsw.edu.au/news/2022/12/can-machines-invent.

[11] Farhad, M. A., & Zakir, M. H. (2024). *Adapting legal horizons in reshaping intellectual property law for the artificial intelligence revolution*. AI and Ethics. https://doi.org/10.1007/s43681-024-00555-x.

[12] Kibirige, H. (2024). The Delving Conundrum of Intellectual Property Rights in The Transformative Era of Artificial Intelligence. *Available at SSRN 4841535*.

[13] Farhad, M. A., & Zakir, M. H. (2024). *Adapting legal horizons in reshaping intellectual property law for the artificial intelligence revolution*. AI and Ethics. https://doi.org/10.1007/s43681-024-00555-x.

[14] Mahingoda, C. B. (2023). Intellectual Property Rights in the Era of Artificial Intelligence: Navigating the Challenges and Expanding the Boundaries.

[15] Suleiman, T. A., & Adinoyi, A. (2023). Telemedicine and smart healthcare—the role of artificial intelligence, 5G, cloud services, and other enabling technologies. *International Journal of Communications, Network and System Sciences*, *16*(3), 31-51.

inventors are human, yet AI systems increasingly generate innovative solutions autonomously, challenging this presumption.[16] The debate surrounding whether AI systems can or should be recognized as inventors underscores a pivotal gap in existing legal frameworks.[17] Moreover, the reliance of AI on vast datasets and iterative computational processes complicates the evaluation of novelty and non-obviousness, as these outputs may transcend traditional human creativity.[18] Without clear guidance, the patentability of AI-generated inventions remains uncertain, creating risks of legal disputes and disincentivizing investment in cutting-edge AI technologies.[19] Recent legal cases, such as the DABUS (Device for the Autonomous Bootstrapping of Unified Sentience) litigation, exemplify the complexity of these issues.[20] Courts have repeatedly rejected the possibility of AI inventorship, citing existing statutory requirements for human inventors.[21] However, these rulings fail to address the reality that AI systems often contribute significantly to the inventive process, necessitating an evolution in patent frameworks to accommodate such contributions.[22] Without these reforms, stakeholders may face continued ambiguities, hindering both technological progress and economic growth.

Artificial Intelligence and Copyright Protection

AI also disrupts the foundational tenets of copyright law, which historically centers on human creativity. Generative AI systems now produce original content, including text, music, and visual art, raising critical questions about the ownership and protection of such works.[23] Existing legal frameworks often deny copyright protection to outputs that lack a human author, leaving AI-generated content unprotected and vulnerable to exploitation.[24] Additionally, the use of copyrighted materials as training datasets for AI models introduces significant ethical and legal concerns, including issues of infringement, fair use, and creator compensation.[25] This practice raises concerns about exploitation and fairness, particularly when the resulting AI-generated works are commercialized without compensating the original rights holders.[26] These challenges demand a recalibration of copyright law to balance innovation with the rights of original creators and users. Policymakers must therefore develop frameworks that incentivize innovation while protecting creators' rights, ensuring that AI-driven creativity operates within ethical and legal bounds.

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[16] Dornis, T. W. (2021). Of 'Authorless Works' and 'Inventions without Inventor'–The Muddy Waters of 'AI Autonomy'in Intellectual Property Doctrine. *European Intellectual Property Review (EIPR), forthcoming*.

[17] Lim, D. (2022). AI, Equity, and the IP Gap. *SMU L. Rev.*, *75*, 815.

[18] Haque, R., Rose, S., & DeSetto, N. (2023). The Non-obvious Razor & Generative AI. *NCJL & Tech.*, *25*, 399.

[19] ANTONIO, S., DALIA, P., & SIMONA, V. (2023). IMPACT OF ARTIFICIAL INTELLIGENCE ON PATENT LAW. *Humanities Studies*, *17*(94).

[20] Gibson, J. (2021). Artificial intelligence and patents: DABUS and methods for attracting enhanced attention to inventors. *Queen Mary Journal of Intellectual Property*, *11*(4), 401-408.

[21] Bisoyi, A. (2022). Ownership, liability, patentability, and creativity issues in artificial intelligence. *Information Security Journal: A Global Perspective*, *31*(4), 377-386.

[22] Bonadio, E., McDonagh, L., & Dinev, P. (2021). Artificial intelligence as inventor: exploring the consequences for patent law. *Intellectual Property Quarterly*, *1*, 48-66.

[23] Verma, A. (2023). The copyright problem with emerging generative ai. *Available at SSRN 4537389*.

[24] Wang, Y., Pan, Y., Yan, M., Su, Z., & Luan, T. H. (2023). A survey on ChatGPT: AI-generated contents, challenges, and solutions. *IEEE Open Journal of the Computer Society*.

[25] Opderbeck, D. W. (2023). Copyright in AI training data: a human-centered approach. *Okla. L. Rev.*, *76*, 951.

[26] Singh, A., & Vinjamuri, L. P. Balancing The Interests of Creators and Users: A Modern Approach to Copyright Law in the Digital Age. *The book is a compilation of the concepts revolving around the contemporary challenges governing the intellectual property regime. The book has been designed in broad areas of Contemporary IP Regime, IP-Industry & Commercialization, AI and IPR-The Juxtaposed Nexus, The Copyright Regime of Contemporary Times, Patent Rights, Creation and Process and IP Crimes & Reprieves and divided into the five sections.*, 204.

Broader Intellectual Property Challenges

AI fundamentally challenges the boundaries of intellectual property law by blurring traditional distinctions between authorship, inventorship, and ownership. Disparities across jurisdictions exacerbate these challenges, as nations adopt divergent approaches to recognizing AI contributions under IP frameworks.[27] This lack of international harmonization fosters regulatory arbitrage and undermines global collaboration.[28] Additionally, emerging issues, such as the role of AI in open-source ecosystems and the ethical implications of data monopolies, further complicate the landscape.[29] To address these shared challenges, the development of adaptive legal models is essential. Such models must balance the competing priorities of fostering innovation, ensuring legal clarity, and upholding ethical considerations.[30] International organizations, including the World Intellectual Property Organization (WIPO), must take a leadership role in facilitating cross-border dialogue and creating harmonized IP standards that reflect the realities of the AI era.[31]

Clarifying the Definition of AI Systems: A Framework for Effective Regulation under the EU AI Act

The European Union's Artificial Intelligence Act (EU AI Act) represents a pivotal legislative effort to establish a comprehensive regulatory framework for artificial intelligence technologies, balancing innovation with societal safeguards.[32] By categorizing AI applications based on risk, from minimal to unacceptable, the Act seeks to mitigate harm while fostering trust in AI systems.[33] However, its rigid classifications and potential jurisdictional inconsistencies underscore the necessity for adaptive and inclusive regulatory models that address evolving technological complexities.[34] Such models advocate for dynamic compliance mechanisms that account for regional differences and technological advancements, ensuring clarity and reducing legal ambiguities.[35] Moreover, they emphasize equitable access by incorporating stakeholder input, particularly from underrepresented communities, and by promoting AI literacy to bridge digital divides.[36] This holistic approach not only aligns with the EU's broader commitment to ethical AI development but also sets a precedent for global AI governance, ensuring that the benefits of AI are distributed fairly and responsibly across diverse societal contexts.[37]

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[27] Makam, G., & Dutta, R. (2023). AI-Generated Creations: Navigating Legal Implications and Crafting Effective Policy Frameworks. *Available at SSRN 4520938*.

[28] Dhabu, A. C. (2024). Legal Implications of Artificial Intelligence in Cross-Border Transactions.

[29] Widder, D. G., West, S., & Whittaker, M. (2023). Open (for business): Big tech, concentrated power, and the political economy of open AI. *Concentrated Power, and the Political Economy of Open AI (August 17, 2023)*.

[30] Taeihagh, A. (2021). Governance of artificial intelligence. *Policy and society*, *40*(2), 137-157.

[31] Van Greunen, L., & Gobac, I. (2021). Building respect for intellectual property—The journey toward balanced intellectual property enforcement. *The Journal of World Intellectual Property*, *24*(1-2), 167-185.

[32] Kalpakos, M. E. (2023). Defining the Future: The AI Act's Potential in equitably Safeguarding Fundamental Rights and Promoting AI Innovation. *UFITA*, *87*(1).

[33] Wörsdörfer, M. (2024). Mitigating the adverse effects of AI with the European Union's artificial intelligence act: Hype or hope?. *Global Business and Organizational Excellence*, *43*(3), 106-126.

[34] Outeda, C. C. (2024). The EU's AI act: A framework for collaborative governance. *Internet of Things*, 101291.

[35] Walter, Y. (2024). Managing the race to the moon: Global policy and governance in Artificial Intelligence regulation—A contemporary overview and an analysis of socioeconomic consequences. *Discover Artificial Intelligence*, *4*(1), 14.

[36] Butt, J. (2024). Analytical Study of the World's First EU Artificial Intelligence (AI) Act. *International Journal of Research and Publications*, *5*(3).

[37] Díaz-Rodríguez, N., Del Ser, J., Coeckelbergh, M., de Prado, M. L., Herrera-Viedma, E., & Herrera, F. (2023). Connecting the dots in trustworthy Artificial Intelligence: From AI principles, ethics, and key requirements to responsible AI systems and regulation. *Information Fusion*, *99*, 101896.

Navigating the Complexities of AI Governance and Intellectual Property: Legal, Ethical, and Global Challenges

Designing and implementing governance structures for AI poses an array of intricate challenges, further complicating intellectual property (IP) protection in this rapidly advancing field. The complexity of AI systems—characterized by their reliance on large, often proprietary datasets, intricate algorithms, and autonomous decision-making processes—frequently outpaces the adaptability of current legal and regulatory frameworks.[38] This creates uncertainty in defining ownership, authorship, and accountability, particularly when AI systems generate innovative outputs that traditional IP laws were not designed to address.[39] The global nature of AI amplifies these difficulties, as divergent national priorities, regulatory approaches, and ethical norms impede efforts to harmonize international governance.[40] For IP protection specifically, these disparities create barriers for cross-border innovation, fostering fragmentation that complicates the recognition and enforcement of IP rights.[41] Policymakers are further tasked with balancing the promotion of innovation against safeguarding public interests, such as equity, transparency, and access.[42] The convergence of these challenges underscores the urgent need for governance structures that not only address the technical and ethical dimensions of AI but also ensure that IP frameworks are equipped to navigate the unique complexities posed by AI-driven innovation.

AI's transformative impact on innovation has intensified debates surrounding intellectual property frameworks, particularly the attribution of rights to AI-generated works.[43] Cases such as Thaler v. Comptroller-General of Patents (DABUS case) illustrate the challenges courts face in addressing whether AI can be recognized as an inventor.[44] The Thaler v. Comptroller-General of Patents (DABUS case) addressed whether an AI system, DABUS, could be recognized as an inventor under UK patent law.[45] Dr. Stephen Thaler argued that DABUS autonomously created inventions and should be listed as the inventor, with Thaler entitled to hold the patent rights as the AI's owner.[46] The UK courts ruled against this, holding that the Patents Act 1977 requires an inventor to be a natural person, and since AI lacks legal personality, it cannot be an inventor.[47] Furthermore, ownership of patent rights depends on a valid human inventor, which was absent in this case.[48] The ruling highlighted the limitations of current patent laws in addressing AI-

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[38] Makam, G., & Dutta, R. (2023). AI-Generated Creations: Navigating Legal Implications and Crafting Effective Policy Frameworks. *Available at SSRN 4520938*.

[39] Picht, P. G., & Thouvenin, F. (2023). AI and IP: Theory to policy and back again–policy and research recommendations at the intersection of artificial intelligence and Intellectual Property. *IIC-International Review of Intellectual Property and Competition Law*, *54*(6), 916-940.

[40] Abdikhakimov, I. (2023, June). Unraveling the Copyright Conundrum: Exploring AI-Generated Content and its Implications for Intellectual Property Rights. In *International Conference on Legal Sciences* (Vol. 1, No. 5, pp. 18-32).

[41] Tombekai, T. (2020). The Ownership of Artificial Intelligence (AI) Generated & Created Inventions. *Available at SSRN 3772947*.

[42] UNESCO, C. (2021). Recommendation on the ethics of artificial intelligence.

[43] Hao, Y. (2024). The Rise of" Centaur" Inventors: How Patent Law Should Adapt to the Challenge to Inventorship Doctrine by Human-AI Inventing Synergies. *J. Pat. & Trademark Off. Soc'y*, *104*, 71.

[44] Court of Appeal. (2021). THALER v COMPTROLLER GENERAL OF PATENTS. *Reports of Patent, Design and Trade Mark Cases*, *138*(11), 855-890.

[45] Albayrak, F. D. I. (2024). Artificial Intelligence and Patent Law: Patent Applications for DABUS. In *Artificial Intelligence* (pp. 166-178). CRC Press.

[46] Pathak, A. (2023). *The Thaler Case: Can Artificial Intelligence Machines Be "Inventors" Under Patent Law?*. SAGE Publications: SAGE Business Cases Originals.

[47] Court of Appeal. (2021). THALER v COMPTROLLER GENERAL OF PATENTS. *Reports of Patent, Design and Trade Mark Cases*, *138*(11), 855-890.

[48] Makam, G., & Dutta, R. (2023). AI-generated creations: Navigating legal implications and crafting effective policy frameworks. Available at SSRN 4520938.

generated innovations and emphasized the need for legislative reform to keep pace with technological advancements.

Fragmentation of judicial decisions across national and regional jurisdictions compounds these issues, creating a fragmented regulatory landscape that impedes international collaboration. While jurisdictions such as the United States and the European Union maintain stringent requirements for human authorship, other regions, including China, adopt more expansive interpretations.[49] These disparities underscore the necessity for a global intellectual property framework that tackles the distinct challenges posed by AI-driven innovation.[50] A cohesive strategy would standardize definitions of inventorship and authorship, guarantee fair protection for creators globally, and promote the dissemination of AI-generated innovations.[51] In the absence of global harmonization, inventors might resort to "forum shopping," pursuing intellectual property protection in jurisdictions that are most advantageous for AI-assisted innovations, thereby exacerbating the regulatory complexity.[52]

The presence of ethical considerations significantly complicates the governance of AI-driven innovation, particularly about intellectual property (IP). A growing concentration of intellectual property rights among a small number of dominant entities poses a risk of exacerbating global inequities, disproportionately harming underrepresented regions and marginalized stakeholders.[53] Artificial intelligence systems rely on data protected by copyrights for training, exacerbating this imbalance raising significant concerns regarding fairness, transparency, and equitable access.[54] These difficulties highlight the urgent need for a dual strategy: extensive legal reform to rectify deficiencies in global protection of IP law and the incorporation of ethical principles into governance structures to promote inclusivity and sustainability.[55] We need both these strategies to tackle the presented challenges. UNESCO's AI Ethics Recommendation and the European Union's initiatives for equitable AI policies are two examples of new frameworks in global AI governance that provide essential guidance for the creation of regulatory models that are transparent, adaptable, and inclusive.[56] The design of these models aims to tackle the ethical and equity-related issues that arise from the innovation of artificial intelligence.[57]

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[49] Hutukka, P. (2023). Copyright Law in the European Union, the United States and China. *IIC-International Review of Intellectual Property and Competition Law*, *54*(7), 1044-1080.

[50] Kibirige, H. (2024). The Delving Conundrum of Intellectual Property Rights in The Transformative Era of Artificial Intelligence. *Available at SSRN 4841535*.

[51] Rao, D., & Sharma, S. (2023). Secure and Ethical Innovations: Patenting Ai Models for Precision Medicine, Personalized Treatment, and Drug Discovery in Healthcare. *International Journal of Business Management and Visuals, ISSN: 3006-2705*, *6*(2), 1-8.

[52] Makam, G., & Dutta, R. (2023). AI-Generated Creations: Navigating Legal Implications and Crafting Effective Policy Frameworks. *Available at SSRN 4520938*.

[53] Hao, Y. (2024). The Rise of" Centaur" Inventors: How Patent Law Should Adapt to the Challenge to Inventorship Doctrine by Human-AI Inventing Synergies. *J. Pat. & Trademark Off. Soc'y*, *104*, 71.

[54] Makam, G., & Dutta, R. (2023). AI-generated creations: Navigating legal implications and crafting effective policy frameworks. Available at SSRN 4520938.

[55] Mbah, G. O. (2024). The Role of Artificial Intelligence in Shaping Future Intellectual Property Law and Policy: Regulatory Challenges and Ethical Considerations. *Journal homepage: www. ijrpr. com ISSN*, *2582*, 7421.

[56] Morandín-Ahuerma, F. (2023). Ten UNESCO Recommendations on the Ethics of Artificial Intelligence.

[57] Régis, C., Farnadi, G., Dreier, V., Rubel, S., & d'Oultremont, C. (2023). *Missing Links in AI Governance*. B. Prud'homme (Ed.). United Nations Educational, Scientific and Cultural Organization (UNESCO).

Ethical and Societal Issues - Difference Between Ethics and Morals & Their Variability Across Countries

Culture, religion, and personal beliefs shape morality and personal beliefs.[58] They are subjective and vary widely between individuals and society. Alternatively, ethics are standards or guidelines for behavior imposed by groups, industries, or authorities to help people make fair decisions at work or in society.[59] In commerce, law, and medicine, ethics is more objective and universal, although it changes with social norms and technology.[60] Cultural, religious, and historical variations play a significant role in shaping morality, causing national differences.[61] Western capitalism considers intellectual property (IP) protection a basic right, while collectivist nations value knowledge interchange over ownership.[62] Laws and industrial norms typically include ethical precepts. Different governments and parties set boundaries depending on societal standards, technological priorities, and economic aims.[63] This gap is especially important in new domains like AI-generated IP and its social impacts.

Different economic and legal systems have very different ideas about the moral and social problems that come up with AI-generated intellectual property (IP) creating a complex global inequality.[64] In capitalist economies such as the United States, intellectual property rights are frequently regarded as essential for promoting innovation, raising apprehensions that AI-generated creations may be monopolized by a select group of dominating technology companies, hence exacerbating wealth and control concentration.[65] Concurrently, countries like China impose stricter regulations on AI ownership to mitigate monopolistic dominance.[66] While Scandinavian nations promote the public accessibility of AI-generated material.[67] The issue of equitable pay models for AI-generated works creates a split between countries with robust individual property rights—where human artists may seek remuneration despite AI automating their tasks—and collectivist societies that prioritize public access and principles of free sharing.[68] These disparities underscore a key ethical quandary: whether AI should function as an instrument to augment human creativity or to supplant it totally for corporate profit.

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[58] Gamage, K. A., Dehideniya, D. M. S. C. P. K., & Ekanayake, S. Y. (2021). The role of personal values in learning approaches and student achievements. *Behavioral sciences*, *11*(7), 102.

[59] López Jiménez, D., Dittmar, E. C., & Vargas Portillo, J. P. (2021). New directions in corporate social responsibility and ethics: codes of conduct in the digital environment. *Journal of Business Ethics*, 1-11.

[60] Zhang, J., & Zhang, Z. M. (2023). Ethics and governance of trustworthy medical artificial intelligence. *BMC medical informatics and decision making*, *23*(1), 7.

[61] Gamage, K. A., Dehideniya, D. M. S. C. P. K., & Ekanayake, S. Y. (2021). The role of personal values in learning approaches and student achievements. *Behavioral sciences*, *11*(7), 102.

[62] Rikap, C. (2021). *Capitalism, power and innovation: Intellectual monopoly capitalism uncovered*. Routledge.

[63] Díaz-Rodríguez, N., Del Ser, J., Coeckelbergh, M., de Prado, M. L., Herrera-Viedma, E., & Herrera, F. (2023). Connecting the dots in trustworthy Artificial Intelligence: From AI principles, ethics, and key requirements to responsible AI systems and regulation. *Information Fusion*, *99*, 101896.

[64] Lim, D. (2022). AI, Equity, and the IP Gap. *SMU L. Rev.*, *75*, 815.

[65] Korinek, A., & Vipra, J. (2025). Concentrating intelligence: scaling and market structure in artificial intelligence. *Economic Policy*, *40*(121), 225-256.

[66] Zhang, A. H. (2024). The Promise and Perils of China's Regulation of Artificial Intelligence. *Available at SSRN*.

[67] Hylland, O. M. Regulating artificial art. Comparing cultural policy strategies, narratives and responses in light of the AI revolution.

[68] Díaz-Rodríguez, N., Del Ser, J., Coeckelbergh, M., de Prado, M. L., Herrera-Viedma, E., & Herrera, F. (2023). Connecting the dots in trustworthy Artificial Intelligence: From AI principles, ethics, and key requirements to responsible AI systems and regulation. *Information Fusion*, *99*, 101896.

The influence of open-source AI and regulatory openness adds complexity to global AI governance, extending beyond ownership and pay.[69] Open-source AI is regarded as an ethical remedy in poor nations, where access to sophisticated AI tools may mitigate the technology divide; nevertheless, in economies with robust patent and copyright rights, firms frequently oppose open-source models to preserve revenues.[70] This prompts questions on whether AI-generated knowledge ought to be strictly regulated by private corporations or made accessible for the collective advantage of society. Transparency and accountability in AI-generated material are contentious issues, as the European Union promotes stringent AI disclosure regulations, whilst other countries emphasize swift AI advancement over regulation, increasing the likelihood of misinformation, deepfakes, and biased results.[71] The difficulty is to balance AI's promise for advancement with the necessity of ethical protection, assuring responsibility without hindering technological innovation. Resolving these worldwide ethical gaps necessitates international collaboration, flexible legislative frameworks, and a dedication to harmonizing AI innovation.

Harmonizing IP Law for AI-Generated Innovations

A unified intellectual property (IP) framework is essential for addressing the multifaceted challenges posed by AI-generated innovations.[72] Hybrid inventorship models, which recognize the collaborative contributions of both human creators and AI systems, provide a practical and forward-looking approach.[73] These models can allocate primary IP rights to human operators while acknowledging AI's critical role in the inventive process, thereby reducing disputes, encouraging collaboration, and establishing clearer pathways for protecting AI-generated outputs.[74] To further accommodate the distinct nature of AI-driven innovations, AI-specific IP classifications could offer tailored protections that address their unique characteristics while seamlessly integrating into existing legal frameworks.[75]

Achieving global consistency in IP governance necessitates substantial enhancements to international agreements, such as the Trade-Related Aspects of Intellectual Property Rights (TRIPS).[76] Incorporating AI-specific provisions into these frameworks could harmonize definitions, protections, and enforcement mechanisms across jurisdictions.[77] These provisions should address key issues, including inventorship determination, the legal treatment of datasets used in AI training, and mechanisms for resolving disputes over AI-generated IP claims.[78]

[69] Eiras, F., Petrov, A., Vidgen, B., Schroeder, C., Pizzati, F., Elkins, K., ... & Foerster, J. (2024). Risks and opportunities of open-source generative AI. *arXiv preprint arXiv:2405.08597*.

[70] Seger, E., Dreksler, N., Moulange, R., Dardaman, E., Schuett, J., Wei, K., ... & Gupta, A. (2023). Open-sourcing highly capable foundation models: An evaluation of risks, benefits, and alternative methods for pursuing open-source objectives. *arXiv preprint arXiv:2311.09227*.

[71] Widder, D. G., Nafus, D., Dabbish, L., & Herbsleb, J. (2022, June). Limits and possibilities for "Ethical AI" in open source: A study of deepfakes. In *Proceedings of the 2022 ACM Conference on Fairness, Accountability, and Transparency* (pp. 2035-2046).

[72] Mbah, G. O. (2024). The Role of Artificial Intelligence in Shaping Future Intellectual Property Law and Policy: Regulatory Challenges and Ethical Considerations. *Journal homepage: www. ijrpr. com ISSN*, *2582*, 7421.

[73] Hao, Y. (2022). The Rise of 'Centaur' Inventors: How Patent Law Should Adapt to the Challenge to Inventorship Doctrine by Human-AI Inventing Synergies. *Journal of Patent and Trademark Office Society (2023 forthcoming)*.

[74] Liu, T., & Yu, Z. (2022). The relationship between open technological innovation, intellectual property rights capabilities, network strategy, and AI technology under the Internet of Things. *Operations Management Research*, *15*(3), 793-808.

[75] Picht, P. G., & Thouvenin, F. (2023). AI and IP: Theory to policy and back again–policy and research recommendations at the intersection of artificial intelligence and Intellectual Property. *IIC-International Review of Intellectual Property and Competition Law*, *54*(6), 916-940.

[76] Van Greunen, L., & Gobac, I. (2021). Building respect for intellectual property—The journey toward balanced intellectual property enforcement. *The Journal of World Intellectual Property*, *24*(1-2), 167-185.

[77] Tamás, F. (2024). Upside Down: Liability, Risk Allocation and Artificial Intelligence. *Pro Publico Bono–Public Administration*, *12*(1), 85-99.

[78] Picht, P. G., Brunner, V., & Schmid, R. (2022). Artificial intelligence and intellectual property law: from diagnosis to action. *Max Planck Institute for Innovation & Competition Research Paper*, (22-08).

International alignment will create a stable regulatory environment that fosters innovation but also acts to promote the equitable distribution of benefits from AI technologies on a global scale.

Ethical considerations must underpin these efforts to ensure that IP governance frameworks promote inclusivity and fairness. Implementing revenue-sharing models, supporting open-source initiatives, and fostering knowledge-sharing platforms can help bridge gaps between resource-rich regions and underrepresented communities.[79] Collaborative initiatives with developing nations to enhance their capacity for AI innovation and IP management will play a vital role in equitably distributing the benefits of AI-driven advancements.[80] Transparency in licensing agreements, decision-making processes, and access to IP-related information will strengthen trust and fairness within the global IP ecosystem.[81] By prioritizing these measures, policymakers can lay a sustainable foundation for the effective governance of AI-generated innovations, ensuring that their transformative potential benefits all of humanity.

Conclusion

Addressing the complex challenges of AI-driven innovation demands harmonized international intellectual property (IP) frameworks that integrate adaptive regulatory mechanisms. The European Union's Artificial Intelligence Act (EU AI Act) exemplifies a forward-looking model that evaluates AI systems based on data dependency, knowledge production, and formal uncertainty. This methodology offers a replicable blueprint for developing robust global governance structures that resolve legal ambiguities, promote innovation, and build public trust. By fostering regulatory coherence and incorporating AI-specific provisions into frameworks like the Trade-Related Aspects of Intellectual Property Rights (TRIPS), policymakers can enhance cross-border collaboration, mitigate fragmentation, and ensure consistent protection for AI-generated outputs. To achieve these goals, interdisciplinary collaboration across legal, technical, and ethical domains is critical. Research initiatives should focus on pressing issues such as algorithmic bias, data transparency, and equitable access to ensure governance frameworks remain relevant in the face of rapid technological advancements. Supporting open-source initiatives, equitable licensing frameworks, and capacity-building programs in underrepresented regions can empower a broader spectrum of stakeholders to participate actively in the global AI-driven economy.

Sustainable and inclusive IP governance requires balancing innovation with societal safeguards. Policymakers must prioritize transparent systems for IP ownership, alongside ethical revenue-sharing models, to promote the equitable distribution of AI's transformative benefits. Collaborative international efforts that integrate ethical principles and equitable development strategies will not only strengthen the legitimacy and efficacy of global AI governance but also ensure that AI technologies drive progress that benefits all of humanity, fostering a future built on innovation, trust, and accountability.

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[79] van Cappellen, F. A. (2021). *Intellectual property strategies in the age of artificial intelligence* (Master's thesis).
[80] Saidakhrarovich, G. S., Hoeren, T., Gulyamov, S., Rustambekov, I., Zolea, S., Juchniewicz, E., ... & Rodionov, A. Democratizing Innovations: A New Perspective on Intellectual Property to Advance Social Justice in the Age of Ai. *Available at SSRN 4826900*.
[81] Lim, D. (2022). AI, Equity, and the IP Gap. *SMU L. Rev.*, *75*, 815.