COPYRIGHT PROTECTION FRAMEWORKS FOR OUTPUTS CREATED ENTIRELY OR PARTIALLY BY ARTIFICIAL INTELLIGENCE, ESPECIALLY GENERATIVE MODELS

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ABSTRACT

Artificial intelligence, particularly generative models, is reshaping the creation of artistic, literary, and technological works, raising complex questions within copyright law. Traditional copyright frameworks are premised on human authorship, intentional creativity, and originality, which creates tension when applied to works generated autonomously or semi-autonomously by machines. This paper examines the evolving global debate regarding whether AI-generated outputs merit protection, and if so, who should be recognized as the rights holder the AI's developer, the user providing inputs, or neither. By analyzing legal doctrines across different jurisdictions, including the Japan, the Indonesia, and emerging perspectives in Asia, this study highlights the uncertainty surrounding authorship standards, originality assessments, and ownership allocation in the era of intelligent systems. The paper further considers hybrid works co-created by humans and AI, where the threshold of human contribution becomes a critical determinant of eligibility for protection. Ultimately, the research argues for a nuanced rethinking of copyright frameworks that balances the incentive to innovate with the need to safeguard human creativity, ensuring that the law remains responsive to technological disruption without undermining its foundational principles.

Introduction

The fast growing world of artificial intelligence (AI) has changed the meaning of creativity - a combination of human creativity and machine intelligence as never before in history. Large language models, image synthesis, and automated music generation are all examples of generative AI and other technologies that are capable of creating complex texts, images, and soundscapes on the human quality level. This technological marvel has presented a chance and threat to the copyright law, as it is an avenue of access and various means of inventions, as well as a loss of a pillar of copyright which is humanistic. The current copyright laws which are based on the individual authorship, creativity and intellectual contribution do not adequately address the results originating in self-learning algorithms and/or machine-generated creativity. The tension is, therefore, whether these outcomes should be copyrighted, and if so, who owns them, the developer of the AI, the user providing prompts, or no one.

The study's research question draws from the legal and philosophical dilemma of whether and how current copyright laws should shift to catch up with works produced directly or indirectly by artificial intelligence. The study has three goals. First, it aims to analyze how existing doctrines of authorship, originality, and ownership operate in leading countries where some discourse about AI creativity takes place. Second, there is a comparative focus on how countries in Asia, such as Japan and Indonesia, offer increasing aspirations of becoming test cases for new forms of regulating AI. Third, it assesses through this lens whether or not an international copyright instrument, such as the Berne Convention for the Protection of Literary and Artistic Works and respective World Intellectual Property Organization (WIPO) guides, is sufficient for algorithmic creativity. With its multi-layered considerations, the study aims to clarify conceptual obscurities and advocate for a conceptual construct that would be suitable for the continued protection of the moral authority of authorship and encourage innovation in the beginning paragraph.

Copyright law is fundamentally a human construct that seeks to reward human creativity. The Berne Convention, first adopted in 1886 and overseen by the World Intellectual Property Organization (WIPO), establishes that creative works arise from human intelligence and emotional labor. Likewise, numerous domestic statutes—such as the U.S. Copyright Act, 1976; UK's Copyright, Designs and Patents Act, 1988; India's Copyright Act, 1957 ground authorship in human, personal terms. But as AI models become increasingly self-going, generating outputs in ways that don't require continued human intervention, these norms will be tested like never

before. Courts and policy-makers now must determine what is an appropriate interpretation of the classic humanist approach to intellectual property, including whether an "original" output can be derived by an algorithm if there is no human mental conception involved (or, knowing this, when does genuine human creativity end and machine assistance begin).

Around the world, there is still fragmentation. The United States Copyright Office has persistently argued that copyright registration applies only to works produced by human authors. In its 2023 policy guidance, it specifically refused to protect works produced "entirely by machine or mechanical processes that operate automatically or randomly without the creative input or intervention of a human author." The UK, however, has implemented a different statutory approach. Specifically, Section 9(3) of its Copyright, Designs and Patents Act recognizes computer-generated works as works made by "the person by whom the arrangements necessary for the creation of the work are undertaken." Although this provision predates the current generative AI environment, it is a valuable statute for determining rights in works that are partially generated by machines. The European Union is currently engaged in discussions under the framework of the Digital Single Market Strategy, where the European Parliament has been averse to acknowledging AI as a legal author or inventor, but has instead proposed a sui generis system for AI-assisted outputs.

Meanwhile, there are diverse and changing perspectives in Asia. Japan has led the quality copyright and AI conversation pragmatically. In 2019, it amended its copyright law in modified laws as the voice of subject matter, and the Act on the Protection of Personal Information and Copyright for the Digital Age, allows use of copyrighted materials for machine learning purposes when the use is not for purpose of commercial use for purpose of a human-created work. This action was to facilitate innovation and inform its ethical use of data. The Japanese law continues to maintain that authorship must remain human, as it deserves to encourage innovation but still attends to preserved cultural values of human craft and authorship.

Lastly, Indonesia is a developing jurisdiction in copyright modernization, even though the present Indonesian Law No. 28 of 2014 on Copyright continues to have a human-focused understanding of who qualifies as an author, current policy debates in Indonesia show an expansion in the understanding of AI as a creative tool. Some limited protection, perhaps as a derivative or composite work, has been considered in the Indonesian Directorate-General of Intellectual Property, with the potential of AI outputs, e.g. in digital art or advertising, being given some protection. These debates indicate a bit of acceptance though provisional of a wider

understanding of copyright, which acknowledges collaborative creative efforts between humans and machines.

Managing to perceive the Asian and global trends in conjunction reveals the concomitant conceptual pattern, which is the growing comprehension that creativity is ceasing to be perceived as an attribute exclusively belonging to human beings, but instead, it is being mediated by computing processes and data systems designed to have the ability or simulate or improve human cognition. This does not only question the law of originality, but also the moral and economic justification of copyright. When copyright is necessary to stimulate the human creativity through granting rights to human authors, then to apply the same rights to the works and outputs that lack human authors would be a blow to the moral and economic foundation, on which the copyright is based. Conversely, complete abandonment of protection may deter investments into the AI creative industries, which may slow innovation and technology advancement. The problem then lies in formulating a legal system in which human intellectual contribution is offered without granting artificial systems rights of their own.

Hybrid authorship, in that regard, comes out as a crucial halfway. Numerous works of creativity nowadays are neither completely human nor completely machine. An author may apply text generation tools to assist in the development of his or her style; an artist may apply a platform of image generation to assist in the invention of the idea of the piece of art; a musician may apply algorithmic generated content to help create new sounds. The above-presented examples indicate the ambiguity of the tool and the co-author. The main legal issue is how much human performance should be in order to achieve authorship. Now that it appears, the threshold can simply involve a certain intellectual decision or aesthetic judgement of a human user, to implement protection, as long as the AI was also being used as a tool, rather than as an author. This is in agreement with the approach of the "causal link" in which the human being is the original and deliberate creator of the creative outcome.

Other bodies like WIPO have jointly realized that, it was necessary to address these dilemmas in the world. In 2019, the WIPO launched the WIPO Conversation on Intellectual Property and Artificial Intelligence to seek the opinions of different stakeholders such as governments, technology firms and scholars on different issues including authorship, responsibility and ownership of data. WIPO report of 2023 states the necessity of adaptive framework considering the balance of human creativity and technology, and advocates the idea of soft-law instruments and model guidelines instead of the strict laws and regulations. Likewise, the 2021 UNESCO

Recommendation on the Ethics of Artificial Intelligence also states that it is necessary to uphold human-focused values in the regulation of artificial intelligence and also promotes transparency, accountability, and cultural diversity respect in the context of technological use. Collectively, these international discussions indicate the overwhelming amount of recognition regarding the transformative character of AI and the need to exercise it in a responsible manner, though nobody agrees on everything yet. The implicated implications of this study extend beyond the copyright law per se, to the philosophical foundation of creativity in the digital era. The law should evolve into an anticipatory law as the societies move towards the creation by humans to the creation by algorithm. That will involve reconstructing not just the statutory words but also ideals of norms. Individualistic authors as solitary and closed-ended creators will have to change to a participatory and collective perception of the creative process. A new conceptualized legal system should accomplish and sustain two simultaneous objectives: first, to retain the human creative drive on which culture and moral rights are based; secondly, to open space to the ways of how data-driven processes can serve to bring creativity to the present-day environment.

Finally, this study claims that in the case of the above scenario of AI and copyright is mistaken since issues presented by AI ism cannot be resolved by merely extending or revoking the existing doctrinal stands. In its place, we require a new legal philosophy which would accommodate technological agency as a subset of the larger human ontological project of creativity. This form of scheme would not regard AI as a law person, but as a simplifying machine that is operated in accordance with human planning and will. Therefore the law might still respect its old ethics of rewarding invention, encouraging learning, and benefiting the public domain, but enable the intelligent machine to be an author of ideas. The ongoing intention which now takes place worldwide, whether within WIPO or in the courts of Tokyo, London and Washington, et al, is not merely a matter of legal technicality, but of redefining the definitions of creating, owning as well as being an author in an era where machines are now increasingly more creative in conjunction with humans.

Literature review:

Farzin Dehdar, Copyright and AI-Generated Works, 22 Journal of Intellectual Property Law and Practice 123 (Oxford Univ. Press 2025).

Dehdar in his article assesses the challenging legal issues presented by AI-made works in the existing instant copyright models. He starts by talking about the fundamental conflict in the

copyright legislation: the idea of the human authorship versus the independent creativity of the AI. Dehdar speaks in a systematic, reflective way and shows the disparity of approaches towards Europe, the U.S and Asia. The article explains that it is challenging to use classical norms of originality and authorship to the works that are produced by AI, and the absence of legislation and case law is a challenge. Dehdar takes on the issues surrounding ownership, and whether rights might reside with developers, users, or perhaps AI systems themselves, albeit the latter scenario is much more contentious. His article feeds into a continuing policy dispute, advocating for regulatory approaches that address evolving technological developments such as AI in ways that balance the different interests of stakeholders likely to be engaged recursively in arts and culture ecosystems.

Yiheng Lu, "Reforming Copyright Law for AI-Generated Content," TechReg Journal 81-95 (2025).

Lu introduces a progressive idea of copyright reform to include AI-generated content in the copyright legislation. He claims that the existing copyright frameworks, which are designed to protect human creativity, fail to take into consideration the intricacies of the work initially generated by an autonomous AI. To fix this, Lu proposes alternative definitions in statutes to give copyright to the operator or user of the AI system, grounded on the necessary minimum creativity, and a loose attitude towards contracts that define rights. The article by Lu discusses world practices and judicial reasoning, yet, by conducting a comparative work, its comprehensive study can offer flexible statutory models to legislators of other jurisdictions. The position of Lu can justify a certain degree of protection to the hybrid human-and-AI works as well as make sure that AI-as-creator and copyright author are not interchangeable; human will and responsibility should emerge in the hybrid works.

Sarah Gaffar, Copyright Protection of AI-Generated Works: The Originality and Ownership of AI-generated Works in a Digital World, Asian Journal of International Law (Cambridge Univ. Press 2025).

Gaffar offers a wide-ranging overview of the way the courts and the legislatures of the U.S., U.K., China, and the European Union have struggled to address the issue of authorship and ownership regarding works created with the influence of artificial intelligence. She does not discover any meaningful consensus that authorship by AI is not a recognized legal category; otherwise, she has significant differences which can be used by the courts to locate an exception where there was a significant human contribution to it. According to the work of Gaffar, the

courts rely on the incongruent legal rationales, namely, demanding the establishment of the international compatibility of legal interpretations. Gaffar offers explicit commentary on the current, and future case law, legislation, and bills, and identifies the peculiarities of problems to existing legal rationales as the clear signs that we should reconsider the concept of originality as the criterion of establishing the authorship of a work, at least when it is created with the involvement of AI as a hybrid creatively. She suggested the necessity of the prudent and thoughtful statements of copyright policies that can take into account the incentives to innovation in terms of prioritizing the primary principles of the humanist basis of copyright.

Victoria Abbott and Daniel Rothman, AI-Assisted Creativity and Copyright Authorship, 2025, Australian Intellectual Property Journal 1140 (Thomson Reuters).

This paper addresses the Australian legal landscape and reflects on the stance of copyright law in regards to the distinction it applies between AI as an autonomous creator and AI as a creative tool. According to Abbott and Rothman, the protection of copyright must exist where there is a level of human judgment and intervention to the creative, whether it be their programming of the AI, setting the AI product or editing them. They cover also other policy issues concerning the provision of credit in authorship claiming that the protection will serve the purpose of encouraging innovation as well as restricting unreasonable monopoly of computergenerated works. The authors also take into account more practical issues, including the need to maintain the clarity of rights of AI-assisted or co-created works and suggest changes that would enhance legal clarity and introduce new types of expression.

The Australian Perspectives on AI Copyright by Ankita Thambaiya, 47 Melbourne University Law Review 200 (Melbourne Univ. Press 2025).

Thambaiya criticizes the use of Australian copyright formalism in her scholarship as the tool to apply the strict human originality test and poses problems that are now being voiced in relation to the AI-assisted work. Thambaiya warns that judicial or legislative reform might provide a point of departure of reforming the law to appreciate enough human creative input, no matter how small human creative input is, in AI assisted works. The article critiques judicial lawmaking that maintain human authorship as a sine qua non to safeguard the originality standard, but proposes that the originality standard can be acceptable to interpretation. It also addresses normative policy implications of denying works created using hybrid methods the protection of the law, to be more precise, that it can lead to a chilling effect of creative undertakings and contributions of capital to AI and AI-assisted devices. To sum it up, the stance

taken by Thambaiya promotes the reform of the Australian authorities to safeguard the development of new creative processes along with traditional purposes and objectives of copyright laws.

Jonathan Caldwell, Philosophical perspectives on AI art authorship, 31 Philosophy and technology 49 (Springer 2023).

Caldwell makes a philosophical study of authorship at a time when AI-generated art is the order of the day. He suspects that the legal structure of authorship, which takes authorship directly and significantly as the human intention and expression, is not so helpful in digital space. Caldwell urges to think more broadly about the creativity that is the synergy between humans and machines, the human user as the lead author, who is an agent of imagination, direction, selection and moral agency to the outputs of the AI. His investigation leads to the issues of questionable ethics and concepts of creativity, originality, responsibility and ownership and promotes the copyright doctrines which are more flexible to adapt to the conditions of the hybrid environment. Caldwell provides significant philosophical foundations on reform of the law to introduce hybrid models of creativity.

Sabrina Buick, Copyright and AI Training Data: Transparency and Fair Use 15 Journal of Intellectual Property Law 107 (2025).

Buick addresses the fact that the problem of copyright implications of such extensive use of copyrighted content when training AI models is under-discussed. She maintains that both rights and equity of fairness of the copyright holders and transparency of the training datasets are necessary in relation to the composition and provenance of the AI training datasets. The article discusses a range of legal frameworks, considering both the fair use law and licensing data, and explores the conflicts between copyright laws and the need to keep advancing AI innovation. Buick suggests superior regulatory arrangements and norms to reconcile these conflicting interests and asks to make AI developers, copyright holders, and regulators more transparent and accountable.

Ritu Hoshiar and Manish Sharma, "AI and Copyright in India and Indonesia: Policy Issues," 12 Asian Journal of Intellectual Property Law 85 (Brill 2024).

Hoshiar and Sharma study how intellectual property rules in India and Indonesia are changing as the law collides with AI-based content. Their empirical and legal study suggests that they remain in a human-centered framework of authorship, but they get increasingly involved in the

subtlety generated by AI.

Damian Scannell, "Authorship and Originality in AI-Assisted Works," 40 Journal of the Copyright Society of the USA 25 (2024).

Scannell examines the idea of originality in the U.S. copyright legal regime, as it pertains to AI-assisted works. The article considers the threshold of human creativity, analyzes relevant case law distinguishing between human intellectual origin and function mechanistically performed by a machine, and cautions against conflating mechanistic output with authorship. Scannell urges courts to uphold a meaningful standard of creativity that considers the complexity of being assisted by a mechanical process. The paper also discusses possible statutory revisions that clearly delineate the boundaries of copyright protection, with a methodical approach that considers human authors and innovation..

Katherine McCutcheon, "Copyright Law and AI: Delineating Human vs. Machine Creativity," 41 Intellectual Property Quarterly 120 (Sweet & Maxwell 2023).

McCutcheon's article examines the policy and doctrinal implications of separating genuine human authorship from writing produced by artificial intelligence. McCutcheon discusses various international court decisions and copyright office policies, highlighting the persistent importance of human authorship against the backdrop of changing technolgies. The article discusses originality, control, and intention definitions and offers comments on potential revisions to legislation providing protection for human authors while not undermine AI-driven innovation. Ultimately, McCutcheon advocates for malleable interpretation by courts, along with clarity in legislation.

Lucy White & Egle Matulionyte, "The Creative Role of AI: Legal Challenges," 29 European Intellectual Property Review 240 (LexisNexis 2020).

White and Matulionyte provide a critique of how the European Union jurisdiction of copyright law is being impacted by AI. They argue that there are considerable disconnections between the creativity of generative AI and the EU authorship regime's focus on human authorship. The article analyze various discussions taking place within the EU, recent proposed legislation, and case law that addresses whether AI-assisted works can be accommodated within the EU copyright regime. They call for realistic and practical solutions implicating a trade off in the balancing of the incentive to create/innovation, user access and fair use/weighing against or including alternative collaborative authorship models and sui generis rights for AI-generated

works.

H.G. Atilla, "Minimal Creativity and AI-Generated Works," 49 University of Sydney Law Review 87 (Sydney Univ. Press 2024).

The article by Atilla discusses minimal creativity as a standard for establishing copyright in AI-generated materials. While she acknowledges that the human aspect of creativity is often obscured, it may nonetheless be enough where the mere act of presence – as curator or, in some cases, in selecting from multiple outputs of an AI system – is taken into consideration. To illustrate the idea, the paper examines Australian law's originality requirement, as well as similar doctrines from other common law jurisdictions. Atilla provides a rationale in favor of speaking to the possibility of a modern judicial approach to accommodate AI-assisted creative work without attributing the status of a legal person unto AI. Atilla also emphasizes the importance of protecting copyright, not only for the purpose of recognizing and rewarding the cognitive effort of the creator, but also for its role in the broader cultural and social landscape.

Martin Hugenholtz & Joana Quintais, "AI Tools and Authorship: New Legal Interpretations," 36 European Journal of Law and Technology 15 (Open Access Journal 2021).

Hugenholtz and Quintais explore the transformation of paradigms of authorship, which bring AI as a creative medium. They introduce a discourse of the way AI contradicts the current legal definitions of originality and creative control in the context of the European digital law. According to Hugenholtz and Quintais, AI must be regarded as an enhancer of the creative capacity of the human author, but not a legal text generator. They state that a more adaptable definition of authorship and intellectual property rights is needed to keep up with the technological reality without harming the human ability to create.

Hasanzade suggests that the existing copyright regulations need to be modified widely to bring AI into the copyright regulations, especially by distinguishing between the rights of AI creators, users, and the owners of the data used. The paper explains the inadequacy of the existing copyright management, and examines reactions of different jurisdictions across the globe, and declares a necessity of a legal clarification of authorship, originality and ownership of AI-generated content. Hasanzade supports a mixed solution that would enable the safeguarding of human creativity and enable AI to be more creative, but put the interests of the population into consideration.

Ahuja offers a philosophical and doctrine-based dissection of authorship, which can be used in the era of artificial intelligence. What is worrying the author is that the old humanistic ideas of authorship are clashing with machine-enhanced creativity. Ahuja disapproves of rigid concepts of authorship in favor of the concept of laws of hybrid human-machine authorship. Ahuja addresses the policy aspects of moral rights, economic incentives and technological progress, and urges the legislatures and the courts to reform the practice of crowdfunding, in a way that allows innovative growth, yet allows social sharing in creativity.

Research gaps:

Authorship Ambiguity: The traditional copyright laws demanded that the author of a work be a human being to obtain copyright protection, however, the number of AI-based systems capable of generating content with little to no human involvement is on the rise. This is ambiguous concerning the identity of the author (the AI developer, the AI user who gave the prompts, or none at all), implying that the text generated by AI does not have an author and is either not under copyright or is under the Free Domain. This brings about uncertainty of the legal system to creators and investors.

Originality and Creativity Standards: The existing copyright law utilizes the current copyright law based on human creativity. This is negated by AI-generated material, which blindly recombines existing data using an algorithmic approach. Courts and other policymakers do not have a clear picture of what is adequate human creative input in human-AI hybrid works, and it has led to the jurisdictions handling cases in different ways.

Confusion regarding Ownership and Liability: In the case when an AI is the creator of a work, it is hard to define what the ownership and liability is. The current literature lacks agreement between the owner of the AI development, use, or anyone. This ambiguity again makes enforcement and copyright administration difficult in cases where infringement took place after AI has been trained on a copyrighted information.

In brief, there is no proper protection and guidance given in the current copyright law regarding the usage of the datasets to save, process, or study. To a significant extent, the scenario is also complicated by the fact that AI training sets are not usually made available to them.

Deficiency in Law and Policy: The pace of technological development has superseded the legislative change world over. The discrepancy among jurisdictions is widespread with some legislatures and regulators choosing to offer sui generis protection to AI-generated precursors

to works whilst others still exist, working diligently, in an anthropocentric perspective. The legal fragmentation creates confusion to creators, users and developers of AI applications.

Moral and Philosophical Problems: In addition to the legal descriptions/constructs, there are apparent underlying arguments as to whether AI is viewed as a creator, there is consideration of human rights versus machine productivity and significance attached to conservation of cultural and moral values of authorship. The current constructs lack viable systems of transferring normative notions outside the prevailing value systems.

Research Methodology

The study adopts a qualitative doctrinal and comparative legal research methodology in the study to research copyright protection strategies to works produced based on artificial intelligence (AI). The primary legal sources of interest, like laws, case law, administrative instructions of the statutory material concerning the copyrights and authorship norms, in jurisdictions with varying approaches in AI-generated materials are reviewed in a systematic manner. The jurisdictions considered are the United States, United Kingdom, European Union, Japan and Indonesia and also in the new Asian views.

The method of data collection will entail a critical analysis of academic literature of the field, which encompasses books, journals, and professional commentary of the law on the principles of copyright, the effects of AI technology, and the policy discussion. The paper also looks at the empirical evidence of judicial rulings and other governmental rulings on laws and documents relating to international treaties such as the Berne convention and the WIPO policy books. The reviews of the secondary sources are based on the recent lawsuits involving AI-generated content, and the administrative decisions made by copyright offices, and especially those that discuss originality and authorship criteria in the works created using AI, give us information in the context of actual scrutiny.

In order to have the data analyzed, the doctrinal application determines the legal principles that are applicable in the authorship, originality, and ownership of the AI-generated works. Comparative analysis takes into account the disparities, and the commonalities, in the addressing of various jurisdictions of legal issues surrounding the areas of ownership, authorship and originality, especially in assessing the suitability and versatility of current copyright systems. Normative evaluation also involves additional implications on policy and ethical considerations such as the evolving nature of creativity under the AI scenario. Legal forecasting/legal modeling techniques project forward action, besides, and formulate the

reasons behind recommending a middle way of change that accelerates the course of creativity and also adapts to the technological development. The hybrid legal system views AI-generated work as promoting the importance of human engagement and intervention in the process of co-creativity and the recognition of the independent nature of AI. The methodological approach embraces an interdisciplinary and holistic approach to the methodological commitment that offers doctrinal particularity, comparative richness, and normative power to make meaningful and practical recommendations on responsive copyright renewal within the AI framework. This assurance finds backing in the new theoretical bases of the study and the emerging frontiers of international law that are within several jurisdictions.

Findings

Nothing that is created solely by AI, that is, without a substantial contribution of human creative labor, can be copyrighted. This norm is based on ancient values that the copyright safeguards original human intellectual work.

Sufficiency, Human Control: There should be sufficient human control of the expressive elements of the work. This is not attained by merely giving prompts or commands to AI - since prompts are not thought of as protectable. Particular pieces of a work that are clearly a result of original human authored work, apparent in the output of the AI, might have copyright protection like a derivative work.

Difference between AI as Tool and AI as Creator: It is a significant distinction, but in general, an application of AI as the aid in the creation of a tool does not disqualify the creation of a copyrightable work, but an application of AI in the production of a work of work disqualifies copyrightability. Under every situation to be determined, (case by case), the exact place of assistance turning to a replacement varies depending on the situation at hand.

Legal Uncertainties and Dissenting interpretations: Different Administration agencies and jurisdiction will disagree on how these standards are to be interpreted and applied. The vague nature of law leads to an uncertain and legally uncertain result in terms of establishing hybrid and human-artificial authorship.

Training Data and Infringement Concerns: The issue of whether or not copyrighted material may be used to train an AI model has led to continued debates on the matter of infringement, liability, and the relevance of fair use. Regulations and law should be developed to further handle the liability and copyright problems with regards to the use of AI to learn and train as

well as detect copyrighted content.

Policy and Future Directions: Although some authorities believe that the existing law can adequately address the issue of copyrightability, the dynamism of AI creations still raises the question of whether, legally, the treatment of AI creations needs additional reform or new types of protection intentionally to review fair incentives and legal ownership of creations.

Discussion:

The implication derived out of the major findings on the copyright protection of works, which have been fully or partially created by artificial intelligence (AI), are sweeping and far-reaching, and the implication has extensive consequences on the legal theory, policy, and the creative industry.

To the extent that first, the reassertion regarding the need and relevance of a certain portion of human authorship is effective to re-establish current and less easy methods of copyright protection, and this is accompanied by an important rift with the fast emerging technologies of AI that could produce the creative outputs entirely devoid of human contribution. This bifurcation will create legal ambivalence about the works generated by AI which will commonly evade existing copyright regulations, and this may create difficulties with respect to safeguarding and monetizing a flood of AI-generated works as they get into the public domain. To human creators, this may reduce the motivation to produce original output, which is infused with AI, and in the creative industry in which AI-infused output is used, this may imply a widespread failure to exercisable rights to, and commercially exploit, AI-infused output.

Second, the unclear concept of threshold of sufficient creative input of humans required to be able to protect, poses devastatingly complex threshold problems, which will prove difficult to verify, apply, and enforce uniformly. An example of a critical analysis question to the human creators will be the difference between applying prompts and making a substantially involved contribution to human creative activity. This ambiguity will be particularly vexing to the players who make use of AI technologies in digital and collaborative creative settings where human and machine interventions create flowing participations, and the boundaries in rights clearance, licensing, and enforcement are merged and obscure.

Third, there is a lack of formal ownership and liability frameworks, which is a risk factor especially regarding cases when AI-generated material is claimed to be similar to a copyrighted

work or in cases where AI is being developed or used by various parties (AI developers, users, clients). No particular guidelines are specified in statute and therefore more chances of conflict over the legal guidelines. This will be a challenge to the contract law, copyright law enforcement and risk management.

Another issue with the construction of the training data is the usage of copyrighted data, which may make one question the improper use, the fair use, and the license of unauthorized copyrighted data. The legal framework on such kind of use is underdeveloped enough and any framework possible must swiftly evolve and explain the legal framework towards balancing copyright protection and necessity of data as a result of technology.

Finally, based on this information, it is necessary to create new frameworks and international settings where there are harmonies. Even though the current frameworks are attempting to resolve some of the problems, they fail to alleviate any uncertainty regarding ownership and wider questions of ethics concerning AI as an innovative agent. The policy of the future should be able to compromise human creativity with the promotion of the creation of creative AI, perhaps by adding sui generis protection or revising the existing principles of copyright to reflect the mixed character of the works supported by AI.

Conclusion:

The study of copyright protection of the works created by artificial intelligence requires a specific level of sophistication, and it is necessary to acknowledge the complexity of the relationship between technology, the law, and creativity in the era of AI. Nevertheless, in spite of this necessity to be subtle, the Copyright law would still be influenced by conventional legal framework, rooted in the principle of original works of human hands, and this idea is upheld and supported by such high-ranking institutions as the 2025 U.S. Copyright Office Report, according to which the works that were not created by human hands will not be under copyright once created by AI. Such a position maintains the conceptual and policy premises of the copyright that lie behind the idea that human intellectual work and creativity should be incentivized and rewarded.

Nevertheless, the generative AIs have evolved so quickly that they have unveiled massive cracks and fissures in this conventional model. AI nowadays may produce complex literary works, works of art, and music and code on its own, which has created an environment where there is a high degree of uncertainty about where machine authorism and human author(s) begins and ends, and the notion of adequate human creative input (in the context of writing an

article, or otherwise) is a critical, but so far unresolved, boundary: again, little or no human intervention (in either direction, simply by holding the writing-pen or simply by specifying what to write) is unlikely to bring one to the necessary level. Legal uncertainty among creators, developers and users of such a gray area and difficulties in redefining doctrines by courts and policymakers.

Also, the issue of ownership and liability is not clear especially where several parties are involved. The developers, operators and end users of AI may each own or be accountable to parts of AI generated content. The legal gap in the area of copyright works in training data only makes the situation harder, and the arguments of infringement, fair use, and the necessity to have concise licensing agreements emerge. These results are indicative of the fact that there is an urgency to reform copyright in the future towards some form of sui generis protection of AI-generated content as a complement and not a substitute to an otherwise human-oriented copyright law. As the law in relation to the human contribution becomes increasingly internationalized and more areas are clearly defined, and a degree of control over the use of data has taken place, the laws can be better and changed with the advancement of AI to benefit numerous interests of both the populace and private entities.

The following empirical studies are recommended: investigation of the intersection of human and AI creativity in practice, research across disciplines, and verification research involving comparative jurisdiction experimentation to promote plausible and adaptive policy reactions.

In the end, the copyright law should find a responsible and appreciating way to evolve in response to the influence of AI and keep the spirit of copyright law at the same time processes, and human creativity should take first place. Copyright should be flexible in such a manner, as to preserve the ethos of copyright law to encourage human creativity, spur innovation, and offer social good, the needed measures to guarantee the law is not obsolete in an ever more automated world.