
HUMAN-AI COLLABORATION: ESTABLISHING THE THRESHOLD OF ORIGINALITY FOR COPYRIGHT PROTECTION

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ABSTRACT

The development of generative artificial intelligence presents a test case to the fundamental assumption of copyright law, which is that authorship is necessarily human. In a situation whereby the person is involved in initiating, selecting, curating, and organizing the output generated by the machine, the problem facing the copyright authorities is that of the adequacy of human intervention in a process involving AI in order to be able to meet the requirement of originality for copyright protection. This paper seeks to address the issue of originality in copyright under the two legal systems of common law and civil law, and the different approaches applied in the U.S., UK, India, and EU concerning this problem.

Keywords: Generative Artificial Intelligence, Copyright Law, Originality, Human-AI Collaboration, AI-Generated Works

I. Introduction

Copyright protection has been built on the basic assumption that a literary work comes from the mind of a man since the days of common law copyright protection. This basic assumption forms the basis of copyright protection.¹ The recognition by the US Supreme Court during the nineteenth century of the possibility of photography being copyrighted rested upon the notion that such a photograph would be subject to copyright protection solely because it would have represented the intellectual vision of its creator. This rule has remained an important part of copyright legislation for over one hundred years as an aspect that was only mentioned occasionally in unusual cases involving animal claimants.² With the rise of more sophisticated generative AI systems that can produce text, images, music, and programming codes through natural language inputs, this previously unnoticed idea has taken center stage in copyright debates.

Tools such as massive language models and image generators based on diffusion have made it possible for a human user to create an artwork through a single prompt.³ The gap between human input and the machine's response lies a process of statistical thinking that is entirely shrouded in mystery; there is no human input whatsoever that affects the exact arrangement of the output.⁴ However, in most real-life situations, the human user does not simply take in the prompt; rather, she analyzes different outcomes of generation, improves on the outcomes, combines them with other pieces of information, and organizes them in a larger context.⁵ In this paper, the intermediate zone, which is not entirely the work of human innovation and not entirely the work of machine production, is termed human-AI collaboration.

The copyright authorities and courts dealing with creations of AI up till now have provided unclear guidance as to what the exact boundary line of originality in this intermediate zone is.⁶ According to the United States Copyright Office, works generated by computer cannot be copyrighted since they are not considered authorial creations but can be copyrighted if such

¹ *Burrow-Giles Lithographic Co. v. Sarony*, 111 U.S. 53, 58 (1884).

² *Naruto v. Slater*, 888 F.3d 418, 426 (9th Cir. 2018).

³ Annemarie Bridy, *Coding Creativity: Copyright and the Artificially Intelligent Author*, 2012 *Stan. Tech. L. Rev.* 5, 6 (2012).

⁴ Daniel J. Gervais, *The Machine As Author*, 105 *Iowa L. Rev.* 2053, 2058 (2020).

⁵ Shlomit Yanisky-Ravid, *Generating Rembrandt: Artificial Intelligence, Copyright, and Accountability in the 3A Era*, 2017 *Mich. St. L. Rev.* 659, 668 (2017).

⁶ James Grimmelman, *There's No Such Thing as a Computer-Authored Work*, 39 *Colum. J.L. & Arts* 403, 405 (2016).

works are a hybrid creation where part of the work is human created.⁷ While there are many legal systems in the world, the United Kingdom remains one unique legal system in having legally acknowledged an authorship of sorts for works that are purely computer generated by attributing the authorship of such works to the person who set up the circumstances for the generation of that work. There is a similar but slightly crude provision in the Indian Copyright Act. The European Union, through its judicial laws on the original intellectual creativity of the author, has set up standards which are essentially in line with AI-assisted authoring.⁸

II. The Doctrinal Architecture of Originality

A. Common Law Foundations: From Sweat of the Brow to Skill and Judgment

The original common law of copyright in England was relatively forgiving when it came to originality. The King's Bench Division in *University of London Press Ltd v. University Tutorial Press Ltd* ruled that the word original in the context of copyright legislation does not imply novelty or creativity, but only means that the work is not copied from elsewhere and comes out of the efforts of the author.⁹ The doctrine is commonly known as the sweat of the brow doctrine, which protected the effort that was put in compiling or creating the work irrespective of whether any creativity was involved.¹⁰

The sweat-of-the-brow theory was well suited to compilers of factual and directory materials because it permitted copyright in works such as telephone directories which involved considerable effort but little creativity. It is only after a while that courts and commentators recognized the danger of allowing copyright in mere facts through a labor-based test alone because it would stifle further use and research of the facts.¹¹ However, as far as trying to achieve balance between the two extremes is concerned, the interpretation of the criteria for skill and judgment in *CCH Canadian Ltd. v. Law Society of Upper Canada* by the Supreme Court of Canada necessitated an activity which entailed something more than just physical effort without involving any element of novelty, but at the same time included some skill and

⁷ U.S. Copyright Office, Copyright Registration Guidance: Works Containing Material Generated by Artificial Intelligence, 88 Fed. Reg. 16190, 16192 (Mar. 16, 2023).

⁸ *Infopaq International A/S v. Danske Dagblades Forening*, Case C-5/08, 2009 E.C.R. I-6569, para. 37.

⁹ *University of London Press Ltd v. University Tutorial Press Ltd* [1916] 2 Ch. 601, 608 (UK).

¹⁰ Jane C. Ginsburg, The Concept of Authorship in Comparative Copyright Law, 52 DePaul L. Rev. 1063, 1066 (2003).

¹¹ Justin Hughes, The Philosophy of Intellectual Property, 77 Geo. L.J. 287, 296 (1988).

judgment as well.¹²

B. The Feist Revolution and the Modicum of Creativity Standard

The major development in common law doctrine can be observed in the United States, as seen in the landmark judgment of the US Supreme Court in *Feist Publications, Inc. v. Rural Telephone Service Co.*¹³ The Court rejected the sweat of the brow approach completely, stating that creativity requires not only independent creation but also a certain minimum amount of creativity. It was made quite clear by the Court that the threshold of innovation is extremely low, showing that a very small amount of creativity is enough, although it is essential to show that there should be some degree of creativity. The Court ruled that there is no creativity in a telephone directory which was arranged in perfect alphabetical order, as such an arrangement does not require any effort and is common.

The Feist minimal creativity standard has firmly become the standard for American originality requirements.¹⁴ It is important to note in the context of the present analysis that while the test defines originality not in terms of the physical or technical act of making the work, but in terms of the use of creative judgment in selecting, arranging, or otherwise structuring the elements of the work. The use of this originality concept which revolves around creativity rather than effort becomes very important when it comes to the computer doing the work.

C. Convergence in the Civil Law Tradition: The Author's Own Intellectual Creation

Copyright systems in Continental Europe, based on the concept of *droit d'auteur*, have traditionally taken a more personalized view of authorship, considering the creation to be an expression of the author's personality.¹⁵ In its ruling in the case of *Infopaq International A/S v. Danske Dagblades Forening*, The Court of Justice of the European Union, has managed to reconcile the said personalist approach within the EU, by making it clear that, in order for copyright to exist, the material should be original, in other words it should be an intellectual creation of the author. What has been clearly established in jurisprudence, is that for the material to be original, there should be creativity from the author in exercising his freedom of

¹² *CCH Canadian Ltd v. Law Society of Upper Canada*, [2004] 1 S.C.R. 339, 355 (Can.).

¹³ *Feist Publications, Inc. v. Rural Telephone Service Co.*, 499 U.S. 340 (1991).

¹⁴ Andres Guadamuz, *Do Androids Dream of Electric Copyright? Comparative Analysis of Originality in Artificial Intelligence Generated Works*, 2017 *Intell. Prop. Q.* 169, 172 (2017).

¹⁵ Paul Goldstein, *Goldstein on Copyright* § 2.2.1 (3d ed. 2023).

choice.¹⁶

The match between the creativity principle of the common law and the standard of the civil law about how to define an author's intellectual creation has been done deliberately, as both standards consider that originality is based on free and creative personal decisions and not on mere effort or ability. Such match provides a solid, yet incomplete, starting point for a cross-national approach to the core issue of human-AI cooperation, in which both traditions basically ask whether the human used creative power, regardless of whether the mechanical process of creation is executed by the machine¹⁷.

D. The Indian Position: Eastern Book Company and the Middle Path

In the landmark case of *Eastern Book Company v. D.B. Modak*, the Indian Supreme Court rejected the concept of the "sweat of the brow" as well as a stringent Feist test of creativity in favor of adopting a middle path.¹⁸ It was held that the creation had to show some degree of creativity apart from the use of skill and judgment in its creation but did not adopt the Feist test in toto, cautioning that such a stringent test would not suit Indian conditions. The test of *Modak*, which requires more than just labour but not an inordinate amount of creativity, brings Indian copyright law closer to the skill and judgment test in Canada rather than the stricter American test, and thus helps identify originality in creations where the creative element, though genuine, may be hard to distinguish from mechanical effort.¹⁹

III. Human-AI Collaboration: A Typology of Creative Contribution

Current human-machine creativity can never be defined in terms of a single, standardized definition; it spans from very little machine involvement to total machine creation. This paper categorizes them into three broad categories.

A. AI as Instrument: The Extension of Human Agency

In one end of the spectrum, generative AI functions merely as an advanced tool in the same way a camera, a word processor, or computer editing software does, giving a human creator

¹⁶ *Football Dataco Ltd v. Yahoo! UK Ltd*, Case C-604/10, 2012 E.C.R. I-0000, para. 39.

¹⁷ P. Bernt Hugenholtz & João Pedro Quintais, *Copyright and Artificial Creation: Does EU Copyright Law Protect AI-Assisted Output?*, 52 IIC 1190, 1196 (2021).

¹⁸ *Eastern Book Co. v. D.B. Modak*, (2008) 1 S.C.C. 1, 21 (India).

¹⁹ V.K. Ahuja, *Law Relating to Intellectual Property Rights* 187 (3d ed. 2017).

the means to execute a previously decided upon artistic vision. Courts have traditionally accepted that the use of a mechanical or electronic device in no way negates the possibility for human authorship, so long as the human operator has enough creative input into the final expressional decisions represented in the work. A photographer who selects a subject, composes a scene, and adjusts the exposure is still the author of the final photograph despite the mechanical involvement of the camera. The moment a human operator uses generative AI to this effect, such as by refining the prompts, selecting among several possible outputs, and substantially editing the selected output, there lies a compelling parallel between instrumental application and human authorship.

B. AI as Co-Creator: Iterative and Interactive Generation

Another form of categorization involves an iterative and conversation-like process between the human agent and the generative system, whereby the human provides sequential prompts, evaluates intermediate results, and guides the generative process towards an ideal result through continued creative discourse. Such a mode of interaction seems closer to actual cooperation as opposed to mere utilitarian application, since the final product is the result of a feedback process and not a single directive. Human intervention is real but diffuse in nature, fragmented among many acts of creation instead of concentrated in a single act of creation, and hence difficult to isolate for copyright purposes²⁰.

C. AI as Autonomous Generator: The Prompt-Output Paradigm

At the opposite extreme exists the single-prompt, single-output model, where a human user provides a concise textual prompt and receives the output with few or no alterations.²¹ The treatment of the issue of images created using the Midjourney technology in the case of *Zarya of the Dawn* on behalf of the United States Copyright Office Review Board demonstrates the prevailing degree of doubt concerning claims of copyright in this realm, as the Board insists that the role of the prompt is more instructive towards a commissioned artist than that of authorship, since the prompting individual is unable to predict the exact visual outcome that will be provided by the system. Such an approach poses the greatest threat to existing concepts of originality, since this is where the link between human judgment of creativity and the

²⁰ Ryan Abbott, *The Reasonable Robot: Artificial Intelligence and the Law* 45 (2020).

²¹ Robert Yu, *The Machine Author: What Level of Copyright Protection is Appropriate for Fully Independent Computer-Generated Works?*, 165 U. Pa. L. Rev. 1245, 1251 (2017).

specific content of the creation is the weakest²².

IV. Comparative Regulatory Responses

A. The United States: Human Authorship as a Prerequisite

It has been maintained by the United States Copyright Office in its registration practices and directives that copyright can be enjoyed only for those works that are authored by human beings because such a limitation is prescribed under the constitution itself, whereby the authority has been vested in Congress to provide such rights exclusively to the creators. It is explicitly stated in the Compendium of Practices of the Copyright Office that the work will not be registered if it has been created using a computer or a mechanical process where no contribution has been made by any human creator. Such a function has been validated in *Thaler v. Perlmutter*, in which the Court of Appeals for the District of Columbia Circuit has affirmed the rejection of the application for the copyright of an artwork created purely by an AI system.²³ Zarya of the Dawn further supported this position with regard to hybrid works through the Copyright Office Review Board's approval of registration for the text that had been created by humans and the selection and arrangement of the AI-produced images featured in the comic book, even while refusing copyright protection for the images because the applicant lacked sufficient creative control over them. The approach taken in America clearly separates the human creative element in selection, arrangement, and editing modifications from machine-generated data that cannot be copyrighted.

B. The United Kingdom: Section 9(3) and the Fiction of Deemed Authorship

In particular, the Copyright, Designs and Patents Act 1988 of the UK is unique in that it covers completely computer-generated works in that it is stated that in cases where a literary, dramatic, musical, or artistic work is created by computer but not by a human being, the person who undertook the arrangements necessary for its creation should be regarded as the author. It is worth noting that this provision is formulated long before the appearance of modern generative AI and is mainly meant for rule-based and procedurally generated content.²⁴ This is because analysts have posed questions regarding the application of the required language in the

²² Re: Zarya of the Dawn (Registration No. VAu001480196), U.S. Copyright Office Review Board Decision, at 8–9 (Feb. 21, 2023).

²³ *Thaler v. Perlmutter*, 130 F.4th 1039 (D.C. Cir. 2025).

²⁴ N.S. Gopalakrishnan & T.G. Agitha, *Principles of Intellectual Property* 112 (2d ed. 2018).

arrangement to a generative AI system, whose operation takes place through the efforts of a firm offering such technological services away from the end-user offering the prompt, hence raising difficult questions as to whom the authorship belongs under section 9(3).

C. India: Section 2(d)(vi) and an Unresolved Question

Clause number 2(d)(vi) of the Indian Copyright Act 1957, amended in 1994, similarly states that the author of a computer-generated literary, dramatic, musical, or artistic work is the person who brings about its creation. While the Indian copyright act has not yet offered a clear judicial interpretation of the above provision in the context of generative AI, the Copyright Office's registration of a painting titled *Suryast*, which listed an AI software as a co-author along with the human being operating it, is an example of how confusing it can be in the practical sense. In the absence of any guidance by appellate court, the Indian lawyers and courts do not know if the causation-based definition in section 2(d)(vi) requires the same level of creativity as the American and civilian laws require or if it allows a lower standard, like the *Modak* middle path discussed above.

D. The European Union: Infopaq and an Untested Standard

At present, the European Union does not have legislation related to AI authorship, thus relying upon the *Infopaq* test requiring a work to be the product of an author's original intellectual creativity, based on the exercise of the latter's freedom of making a creative choice. The key point of this test is its openness for the interaction between humans and AI, since it merely asks whether a human author had made an independent creative choice irrespective of the fact of what role, if any, had played any machine in the materialization of that choice. Regulatory agencies of the Union suggested further analysis of the connection between generative AI and originality test of the EU, but there is still no authoritative legislative or judicial clarification of the issue, thus leaving it to speculation.

V. Constructing a Threshold: Toward a Principled Framework

A. Creative Control and the Locus of Judgment

The analysis offered above reveals that, despite doctrinal differences, a common thread runs through the American, British, Indian, and European approaches: all, each using its distinctive terminology, try to identify the root of creative judgment present in the piece. The current paper

proposes that the concept of creative control, which means the degree to which the decisions of an author determine the expressive content of the final product, must form the basis of the originality assessment of works of joint creation between humans and artificial intelligence. Creative control cannot be viewed as an absolute but should be considered a range; the proposed model represents creative control as such, with certain examples of the human-AI collaboration being located somewhere along the suggested range, corresponding roughly to the instrumental, co-creation, and autonomous generation types described in Part III.

B. Selection, Arrangement, and Transformation as Proxies for Human Authorship

In cases where determining the amount of human creative control exerted over the machine-generated content is difficult, this paper argues that the copyright agencies and courts need to rely on three clear proxies, all of which have been recognized in existing copyright law. First, selection the deliberate choosing of certain AI-generated products out of a pool of several choices – is an example of human creative discernment as it was recognized by Feist to be a form of uniquely human creativity. Second, organization arranging and assembling AI-generated elements into a larger piece of work is also an example of human creative discernment as was recognized in the case of *Zarya of the Dawn* where the protection of the overall arrangement of the comic book was considered even though the individual AI-generated images were not eligible for copyright protection. Third, transformation the substantial editing and rearrangement of AI-generated elements by the human author may be the best example of human creative influence over the machine-generated content.

C. The Problem of Proof: Documenting the Human Contribution

An ongoing problem with the implementation of a control-based approach is the evidentiary one - how can the copyright office or the court find out, in retrospect, the level of control that a human author has had over a particular piece. This paper argues that copyright offices should encourage, but not require, the preservation and disclosure of procedural records, including prompt histories, iterations, and human editing records, in order to prove the claims of human creative control, much like the courts use draft copies and histories of revisions to solve the issues of traditional authorship. The requirements for records should be carefully fine-tuned not to place too heavy burden on regular creative efforts, taking into account that generative AI software is increasingly used, without much notice, in traditional creative programs.

D. Joint Authorship and the Apportionment of Rights

In cases where the creation involves a considerable amount of indivisible creative contributions by multiple humans with the help of AI, the existing rules of joint authorship that require each person to have an intention to combine their contributions into a whole under American law work as an adequate but imperfect analysis tool. According to the Indian Copyright Act, a work of joint authorship is created through the cooperation of multiple authors whose contributions cannot be separated, which would also apply to multi-authors AI-enabled works, provided that the contributions of each human are sufficiently original. The existing rule of joint authorship does not, and perhaps should not, identify the AI system as a joint author because the requirement of human authorship in Part IV acts as a gatekeeping factor.

VI. Emerging Challenges and Policy Considerations

A. Moral Rights in Collaborative AI Works

It is necessary under the Berne Convention for all countries to protect the author's moral rights, which include the right to claim authorship and the right to object to any derogatory use of the work, regardless of the author's economic rights. The Indian Copyright Act provides for this obligation through Section 57, which protects the exclusive rights of the author in spite of the transfer of copyright. In terms of moral rights for works created through collaboration between human beings and artificial intelligence, there arise new questions as the input from the human creator has been affected by AI-generated material, which the person has not conceived himself²⁵.

B. The Risk of Strategic Concealment

In a system where a control-based approach is adopted, as discussed in part V, the incentives for overstating the level of human creativity involved in the production of the work at hand are very high, particularly in cases involving registration regimes such as the one existing in the United States, which demand that there should be an accurate disclosure of the involvement of AI in order to secure copyright protection. The enforcement of the disclosure rules and punishment for material misrepresentation in copyright submissions will play a critical role in

²⁵ Berne Convention for the Protection of Literary and Artistic Works art. 6bis, Sept. 9, 1886, as revised at Paris, July 24, 1971.

ensuring that the credibility of a threshold test based on creative control remains intact.

C. Training Data, Derivative Originality, and Ongoing Litigation

In addition to the issues of copyright originality covered in this paper, there are other types of disputes in law, which are also related to artificial intelligence, such as the disputes of *Andersen v. Stability AI Ltd.* and *Getty Images (US), Inc. v. Stability AI, Inc.* Both of these disputes involve the question of whether using copyrighted materials in order to train the AI systems is legally acceptable, which is a question of doctrine that is different from the one mentioned in this paper. If the court will find that the AI outputs are derivative works of the copyrighted materials used for training them, then the originality analysis proposed here will be applicable only to such works.²⁶

VII. Recommendations

Here are four significant recommendations provided by this paper. First, the copyright office should apply formal inspections protocols according to the creative control approach as described in part V that explicitly recognizes selection, arrangement, and transformation as proxies for human involvement in AI-generated work. Secondly, in countries with unclear legislation on computer-generated works, like India, certain amendments should be applied to make sure when and under what conditions a prompting user is able to claim himself/herself as the author of AI-generated works, drawing lessons from the British experience with the provision of section 9(3). Third, copyright agencies need to set up risk-adjusted disclosure requirements on AI involvement in copyright applications, avoiding too little or too much disclosure. Finally, international organizations, including the World Intellectual Property Organization, should launch continuous comparative analysis of the national approaches to human-AI collaborative authorship due to the intrinsically transnational character of the technology and related creative markets.

VIII. Conclusion

It would be impossible to establish boundaries of originality in joint projects involving humans and artificial intelligence using principles created in the context of situations where human

²⁶ *Andersen v. Stability AI Ltd.*, No. 23-cv-00201, 2024 WL 3823234 (N.D. Cal. Aug. 12, 2024); *Getty Images (US), Inc. v. Stability AI, Inc.*, No. 23-cv-00135 (D. Del. filed Feb. 3, 2023).

labor was equivalent to human creativity. The authors of this paper argue that the necessary doctrinal resources for dealing with this problem have been included in the minimal creativity test, author's individual intellectual creation test and their common law and civil law versions attributing the concept of originality to the use of free human creative judgment and not the physical or mechanical processes behind creation of a work. A new way of thinking about the originality doctrine is not needed; what is necessary, though, is a thoughtful application of existing principles to a new situation with the help of selection, arrangement and transformation as a criterion for drawing a line between copyrightable human-AI cooperation and non-copyrightable machine creation.

Discrepancies between the US approach to verifying human authorship, the British approach to presuming it, the Indian lack of clarity on the issue due to the inadequacy of the legal framework and the European Union's unverified Infopaq standard are unlikely to be resolved without deliberate legislative and administrative action. If there is no adequate concentration on this issue, the copyright law will either protect works lacking human creative effort, thereby undermining the constitutional and philosophical foundations of the copyright agreement, or fail to protect creative efforts of humans using artificial intelligence, thereby discouraging human involvement with generative technology.

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