Available Online: 24 November 2026 DOI: 10.54254/2753-7102/2026.39280

Challenges and solutions in using substantial contribution to assess copyright protection of AI generated content

Meng Huang

Faculty of Law, The Chinese University of Hong Kong, Hong Kong, China

hmengm0110@163.com

Abstract. Assessing substantial contribution requires explaining how a user's involvement in Artificial Intelligence (AI) generation becomes expression protected by copyright. Existing decisions examine prompts, parameter adjustments, and output modifications, but the connection between those operations and expressive authorship requires closer analysis. Through doctrinal analysis and comparison of selected Chinese cases, this article connects user conduct, process evidence, and the scope of protection. It proposes a framework comprising creative intention, expressive control, and process corroboration. Intention explains the purpose of an operation, expressive control identifies human choices, and process records connect those choices with the disputed result. Targeted iteration provides an important means of establishing that connection. In mixed human and machine production, structural, modifying, and selection and arrangement contributions can further delineate protected expression. This gives work qualification and infringement comparison a common foundation in identifiable subject matter. Substantial contribution thus connects creative facts with the scope of rights, confining protection to concrete expression attributable to human creation.

Keywords: artificial intelligence generated content, originality, substantial contribution, expressive control, scope of protection

1. Introduction

Generative artificial intelligence distributes conception, selection, and the execution of expression across different participants, making human contributions central to copyright assessment. Chinese policy documents encourage the integration of artificial intelligence with cultural development[1]. The National Copyright Administration's 2026 Copyright Work Plan for the Fifteenth Five Year Period also calls for adapting copyright rules to artificial intelligence[2]. These institutional concerns require an answer for particular outputs:

[1] Recommendations of the CPC Central Committee for Formulating the Fifteenth Five Year Plan, adopted on 23 October 2025, People's Daily, 29 October 2025. (In Chinese)

[2] National Copyright Administration, Notice Issuing the Copyright Work Plan for the Fifteenth Five Year Period, Guo Ban Fa [2026] No. 3, issued 31 August 2026 and published online 7 September 2026. https://www.ncac.gov.cn/xxfb/tzgg/202609/t20260907_1007129.html (In Chinese)

Copyright: © 2026 by the authors. Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/).

which expression arises from human creative activity, and how far do the resulting rights extend [1]?

Scholarly disagreement centers on the relationship between user input and generated expression [2]. Institutional accounts distinguish work qualification from ownership [3], while the minimum creativity approach maintains the ordinary threshold for protected works [4]. Accounts of user contributions emphasize the modification of expressive details after an output has been selected [5]. Opposing positions question whether prompts determine output expression [6] and challenge work qualification by examining how expressive form arises [7]. The central issue is therefore shifting from the output's appearance to the user's role in forming particular expression.

Some courts examine substantial contribution through prompts, parameters, and modifications, yet the connection between these operations and expressive authorship requires further explanation. In September 2026, the Supreme People's Court issued its Opinions on the Lawful Adjudication of Disputes Involving Artificial Intelligence. The accompanying official questions and answers expressly stated that the copyrightability of AI generated content had been left unresolved[3]. This article uses substantial contribution as an analytical concept for identifying original human input and develops its application in individual cases.

Through doctrinal analysis and comparison of selected cases, this article connects creative conduct, process evidence, and the scope of protection. It compares judicial assessments of user operations and evidence to identify the expression attributable to those operations. The resulting contributions then provide a basis for delineating protection in mixed production. The inquiry concerns work qualification and human contributions, leaving the legality of model training outside its scope. Its purpose is to make substantial contribution explainable and open to evidentiary challenge.

2. Judicial practice and legal foundations

2.1. Human contributions in selected cases

In disputes involving AI generated content, courts have extended their attention from the appearance of an output to the process by which its expression arose. Prompts, parameters, selection, and editing can provide relevant evidence of that process. Whether these operations constitute creation nevertheless depends on their actual relationship to the expression in dispute. Substantial contribution is used here to emphasize an attributable connection between human intellectual activity and concrete expression, rather than to establish a higher originality threshold for technologically assisted works.

In Li v. Liu, the Beijing Internet Court examined the claimant's choices and adjustments concerning prompts, parameters, and generated results. It recognized the disputed image as a work of fine art embodying individualized expression[4]. The case illustrates a process based assessment, rather than recognition of copyright merely because an image has aesthetic appeal. In Tencent v. Yingxun Technology, concerning an article generated through Dreamwriter, the court emphasized the creative team's arrangements concerning data inputs, triggering conditions, templates, and linguistic style[5]. That system and its team based production process differ from contemporary general purpose text to image models. The decision illustrates the relevance of human intervention but cannot establish authorship for every user of generative artificial

[3] Supreme People's Court, Official Questions and Answers on the Opinions on the Lawful Adjudication of Disputes Involving Artificial Intelligence, 7 September 2026. https://www.court.gov.cn/zixun/xiangqing/511111.html (In Chinese)

[4] Beijing Internet Court, Civil Judgment (2023) Jing 0491 Min Chu No. 11279. (In Chinese)

[5] Shenzhen Nanshan District People's Court, Civil Judgment (2019) Yue 0305 Min Chu No. 14010. (In Chinese)

intelligence.

In Feilin Law Firm v. Baidu, the automatically generated analytical portion of a report was not recognized as a human created work. Its assessment differed from that of the human written material in the article[6]. In Feng v. a Cultural Communication Company and Others, the first instance court found that the claimant lacked original generation records for the disputed images. A later demonstration involving similar images did not establish original input into those particular images. Following withdrawal of the appeal, the first instance judgment became effective[7]. The case directs evidentiary scrutiny toward the production of particular images and the connection between user choices, modifications, and disputed expression.

Technological mechanisms, the content of contributions, and evidentiary conditions jointly provide the basis for comparing these cases. Theme specification and concrete compositional design have different creative implications, just as contemporaneous records and later demonstrations carry different probative value. The inquiry should identify the expression claimed, connect human conduct to it, and assess the requirements for a work through the evidence [5].

2.2. Connecting substantial contribution with existing rules

Article 3 of the Copyright Law defines works by reference to originality, an expressible form, and intellectual achievement. Article 11 identifies the natural person who creates a work as its author, while also recognizing legal persons or unincorporated organizations as authors where the specified conditions are satisfied[8]. Maintaining a human creative foundation therefore does not negate organizational authorship, nor does it make artificial intelligence a legal author. The substantial contribution inquiry should identify expression attributable to human creative activity. Payment, account ownership, or the expenditure of considerable time cannot substitute for that inquiry.

Substantiality concerns the nature of a contribution and its connection to expression, rather than its quantity or economic value. Even if a prompt qualifies as a literary work, it does not follow that the resulting image is the user's work. Conversely, a prompt that does not qualify as an independent work does not preclude identifiable human expression arising through other operations. Existing rights in software, models, or training materials similarly do not automatically make a developer the author of every output. Questions of ownership among developers, users, and organizations require separate assessment under the relevant creative facts and existing ownership rules [2, 6].

A contribution centered approach can connect creative incentives with space for public use. Photography and digital drawing demonstrate that technological assistance does not itself disqualify a work. Generative models' capacity to produce expressive details nevertheless prevents the label of tool from resolving the issue. Discussions of limited protection accordingly emphasize original human expression and its boundaries, rather than blanket coverage of machine outputs[9]. This article develops an operational approach

---

6 Beijing Internet Court, Civil Judgment (2018) Jing 0491 Min Chu No. 239. (In Chinese)

7 Zhangjiagang People's Court, Civil Judgment (2024) Su 0582 Min Chu No. 9015; Suzhou Intermediate People's Court, Civil Ruling (2025) Su 05 Min Zhong No. 4840. See the Zhangjiagang Court's official representative case account, 22 April 2026. https://m.thepaper.cn/baijiahao_33033890 (In Chinese)

8 Copyright Law of the People's Republic of China (2020 amendment), Articles 3 and 11; Regulations for the Implementation of the Copyright Law, Article 3. (In Chinese)

9 Tang, Y., Copyright Recognition and Limited Protection of AI Generated Content, Procuratorial Daily, 11 August 2026, reproduced by the Wuxi People's Procuratorate. https://wx.jsjc.gov.cn/tslm/tszs/202608/t20260811_1350613.shtml (In Chinese)

within that orientation, while recognizing the need to examine different models and production processes individually.

3. Difficulties in assessing substantial contribution

Scholarship distinguishes a single generation round from multiple rounds of linear modification to describe differences in user involvement [8]. That distinction is useful descriptively but should not become a rule excluding every single round result or protecting every multi round result. A single round may incorporate a user's drawing or spatial constraints, whereas multiple rounds may merely sample further random outputs. The following analysis focuses on difficulties commonly illustrated by multi round and mixed production, while retaining attributable human expression as the central concern.

3.1. Distinguishing experimentation from creative generation

Experimental generation occurs where users repeatedly generate, inspect, and select outputs without showing what creative decisions they made concerning the expression claimed. For example, asking for a cat and then changing its color to white or gray reveals some choice. The number of instructions does not establish that the user created the posture, lighting, and composition. Whether a color adjustment contributes to a work also depends on its concrete combination with other elements. It would be equally inappropriate to classify every color adjustment categorically as an unprotected idea.

Creative generation emphasizes identifiable choices and arrangements that shape particular expression. For a cat image, a user might sketch its posture, establish subject placement and lighting, then correct local deviations and edit the result manually. Correspondence between the sketch, version changes, and final form provides a concrete basis for attribution. Work qualification still depends on whether those choices satisfy the minimum creativity requirement [4, 5].

These production processes may look similar within the same software interface. The same local adjustment may implement a particular conception or explore a preference, while experimentation itself may prompt creative activity. Process and result should establish which choices became expression and whether the claimed protection corresponds to them. Creative intention can develop gradually, but its proof requires support from concrete conduct.

3.2. Connecting evidence with the disputed expression

Li v. Liu and Feng indicate the importance of connecting process records with the particular result in dispute. A later demonstration can explain how a class of operations works without establishing how the disputed image was originally produced. Contemporaneous prompts, model versions, parameters, output files, and editing records can better support attribution when they corroborate one another. The value of each record depends on the broader evidentiary combination available in the case. Individual decisions should not be converted into an exclusive rule admitting only one prescribed medium [9].

The evidentiary medium, its authenticity, and its probative value require separate consideration. Screenshots, recordings, exported histories, and project files may all contain relevant information. Their sources, completeness, timing, and connection to the disputed result determine their evidentiary role. A screenshot lacking its original medium or surrounding context may carry limited weight, but should not be categorically excluded merely because it is a screenshot. Existing rules on electronic evidence provide the basis for assessing these records. The task is to apply those rules to generation records rather than invent a

new requirement for evidentiary admissibility[10].

Stochastic generation also does not require proof through pixel for pixel reproduction. Model updates, random seeds, and changes to the service environment may prevent subsequent reproduction. Conversely, reproducing an image does not itself prove that a particular person made an original contribution. Courts should apply ordinary civil standards of proof to the connection between human conduct and the disputed expression. Missing records may defeat a claim in litigation, but a failure to prove creative activity must remain analytically distinct from an affirmative finding that no such activity occurred[11].

3.3. Identifying contributions in mixed production

Mixed production may begin with AI generated material subsequently edited in software such as Photoshop, or with human material later modified using artificial intelligence. Users may also move repeatedly between AI tools and professional software [5]. Each process may combine pre existing human works, new human expression, and automatically generated material. The order in which software is used cannot determine ownership by itself.

Human contributions may consist of added lines or local repainting, but may also lie in overall composition, color relationships, or the selection and arrangement of several materials. Contributions of the latter kind do not disappear merely because they cannot be exported as separate layers. Requiring technical separability could overlook originality in an overall arrangement. Conversely, treating any manual modification as sufficient to protect every detail would expand the scope of exclusive rights.

The central difficulty is therefore the legal identification of expression and the delineation of protection. Claimants should specify the lines, structures, relationships, or combinations for which protection is sought. Courts must determine whether these arise from attributable human creation and avoid extending independent protection to automatically generated elements lacking that connection. Commercial value or overall aesthetic appeal cannot supply a missing human creative contribution.

Generation records identify user conduct, version comparisons reveal the resulting expression, and originality determines its qualification for protection. The expression identified also supplies the subject matter for subsequent infringement comparison. Making substantial contribution operational requires connecting operations, expression, and the scope of rights.

4. An operational framework for substantial contribution

Existing rules on works and evidence provide a legal foundation; their application requires connecting particular contributions, supporting materials, and the scope of protection. Courts can organize the inquiry around the expression claimed, establish how the relevant choices arose, assess their originality, and delineate the resulting rights. The following framework develops this sequence through substantive, evidentiary, and subject matter assessment.

---

[10] Supreme People's Court, Provisions on Evidence in Civil Proceedings (2019 amendment), Articles 14, 15, 93 and 94. (In Chinese)

[11] Supreme People's Court, Interpretation on the Application of the Civil Procedure Law (2022 amendment), Article 108. (In Chinese)

4.1. Creative intention expressive control and process corroboration

The inquiry can be organized into identifying creative intention, assessing expressive control, and corroborating the process. Intention provides context, expressive control is central, and process corroboration tests whether the claimed contribution is embodied in the disputed result. These are analytical stages rather than three additional statutory elements. Targeted iteration is important evidence at the final stage, but should not become a mandatory condition for every protected work.

First, creative intention should be identified through observable conceptions, sketches, selected materials, and connected operations. Prompts can indicate what a user wishes to present, but themes, subject matter, moods, and general styles must still be distinguished from concrete expression. Prompt length, professional terminology, and the strength of an intention cannot independently establish originality. Intention may also develop during generation; a complete result need not have been anticipated at the first input [4].

Second, expressive control should concern the user's actual influence over particular expressive elements or their combination, rather than control over every pixel. Sketches, masks, local repainting, and subsequent editing can support attribution when linked to spatial relationships, lines, and concrete forms in the result. An instruction asking only for a dreamlike appearance or an oil painting style requires further explanation of how it became individualized expression. An output's conformity with that description does not establish that the user created the whole image [9].

Third, process corroboration should connect significant inputs, output versions, and the effects of modification. For multiple rounds, the inquiry should consider whether a user identified a specific problem in an earlier version and implemented a corresponding expressive change through adjustment or manual editing. Repeating identical instructions, changing random seeds, or selecting from many results will generally be insufficient by itself to prove authorship of output details. The absence of repeated modification nevertheless does not negate identifiable contributions arising from a single concrete input or a pre existing human work.

The framework connects the expression claimed with the conduct producing it and the supporting evidence. Targeted iteration is assessed through its effect on concrete expression, while technical randomness is considered alongside the user's actual control. Original contributions embodied in expression remain the focus of the inquiry.

4.2. Creative records and staged evidentiary explanation

Record preservation should operate as practical guidance rather than a uniform compulsory checklist. Priority materials may include initial prompts and significant revisions, model and version information, relevant parameters and random seeds, important outputs with timing information, and sketches, layers, and editing files. For steps affecting the expression claimed, the user should explain the object and effect of the modification. Notarization and trusted timing records may assist preservation, but should neither become conditions of copyright nor replace scrutiny of the underlying information [10].

Litigation can proceed through initial evidence, an explanation connecting conduct with expression, and rebuttal followed by an overall assessment. The claimant should identify the work, contribution, and scope, then submit corresponding process materials. Version comparisons and input output relationships should explain how conduct became expression. Courts should consider the opposing party's objections under ordinary civil standards of proof. Such objections may identify spliced records, inconsistent dates, or expression generated independently by the model, and need not establish the complete absence of human involvement. The ultimate burden of proving facts supporting the right does not automatically shift merely because initial evidence has been produced.

Where the opposing party or a platform controls significant electronic records, existing procedures may support applications for judicial collection, preservation, or an order for production. The applicable rules depend on which party controls the relevant evidence. The Supreme People's Court's 2026 Opinions provide guidance on evidence collection and the examination of electronic data in AI disputes and can support this procedural connection[12]. The objective differs from a subsequent demonstration: it is to establish the historical production of the disputed result, rather than require an identical new generation.

4.3. Contribution types and the scope of protection

Separating protection should mean legal delineation, rather than physical extraction of human and machine material. Independently identifiable portions permit separate assessment of their originality and attribution. Choices integrated into an overall composition can instead be assessed through the originality of their combined relationships. An inability to export separate layers concerns the technical process; it neither proves that human contributions are absent nor justifies exclusive rights over the whole result.

Three categories can assist the identification of contributions within mixed production. Structural contributions concern subject placement, spatial relationships, and overall composition. Modifying contributions concern added lines, local forms, lighting relationships, and other concrete changes. Selection and arrangement contributions concern original choices, ordering, and combinations of multiple materials. The categories can overlap and remain subject to the ordinary requirements for works. Applying a filter, resizing an image, or adjusting brightness does not necessarily create a new work.

The scope of protection should correspond to the human expression established through the inquiry. Structural contributions concern identifiable compositional relationships; modifying contributions concern original added expression. Selection or arrangement can be assessed under Article 15 of the Copyright Law without conferring a monopoly over the constituent materials[13]. Automatically generated portions for which no human creative basis has been established should not gain independent copyright merely through incorporation into a mixed result. This does not place those portions automatically in the public domain: they may still implicate pre existing works or other rights.

All three categories may coexist within the same mixed production process. Where users design a composition, repaint a figure, and arrange several materials, protection should reflect those contributions and their combined relationships rather than the names of the software used. Infringement comparisons should identify protected expression and exclude ideas, general styles, and unprotected elements. Work qualification, ownership, and infringement require separate assessment if the delineation of protection is to constrain exclusive rights in practice.

5. Conclusion

Substantial contribution turns on the relationship between user conduct and concrete expression. Li v. Liu's assessment of individualized choices and Feng's attention to original records illustrate its substantive and evidentiary dimensions. Connecting these dimensions moves the inquiry from participation in generation to the expression created by the user.

[12] Supreme People's Court, Opinions on the Lawful Adjudication of Disputes Involving Artificial Intelligence, Fa Fa [2026] No. 10, paragraphs 17 and 18, 7 September 2026. https://www.court.gov.cn/zixun/xiangqing/511101.html (In Chinese)

[13] Copyright Law of the People's Republic of China (2020 amendment), Article 15. (In Chinese)

Creative intention, expressive control, and process corroboration provide a continuous assessment, while structural, modifying, and selection and arrangement contributions translate its conclusions into protected subject matter. Records of significant steps establish how expression arose, targeted iteration is assessed through its actual effect, and rights correspond to identifiable human contributions. Substantial contribution can thereby support work qualification and define the subject matter of infringement comparison, providing protection proportionate to human expression in mixed production.

References

[1] Wu, H. (2024). On the copyrightability of AI generated content: Practice, legal theory and institutions. *China Law Review, 3*, 113–129. (In Chinese)

[2] Zhu, G., Cui, G., Wang, Q., & Zhang, H. (2024). Is AI generated content protected by copyright law? *China Law Review, 3*, 1–28. (In Chinese)

[3] Zhang, P. (2024). Institutional difficulties and solutions concerning the copyright legitimacy of AI generated content. *Science of Law (Journal of Northwest University of Political Science and Law), 3*, 18–31. (In Chinese)

[4] Jiang, G. (2025). The minimum creativity standard for users claiming copyright in AIGC. *Peking University Law Journal, 3*, 681–701. (In Chinese)

[5] Cui, G. (2023). Users' original contributions to AI generated content. *China Copyright, 6*, 15–23. (In Chinese)

[6] Wang, Q. (2024). A third discussion of the position of AI generated content in copyright law. *Studies in Law and Business, 41*(3), 182-200. (In Chinese)

[7] Chen, H. (2026). On the noncopyrightability of AI generated content from the perspective of expressive form. *Journal of Chongqing University (Social Science Edition), 32*(4), 239-250. (In Chinese)

[8] Yu, L. (2025). The legal characterization of AI generated content and its copyright rules. *Law and Society, 6*, 72-84. (In Chinese)

[9] Dong, H. (2026). Judicial assessment of AIGC copyrightability in human machine symbiosis with a focus on human control and contributions. *Digital Law Review, 2*. (In Chinese)

[10] Yao, Z., Ke, X., & Wang, W. (2026). Judicial recognition of copyright in AI generated content: Evolution, practical difficulties and rule construction. *People's Judicature, 7*. (In Chinese)