

Research on Strategies for Cross-border E-commerce Operators to Respond to TROs: From the Perspective of Litigation Based on AI-Generated Content as the Basis of Rights

Jingxuan Peng*

Faculty of Humanities and Social Sciences, Harbin Institute of Technology, Harbin 150000, China

**Corresponding author: Jingxuan Peng.*

Abstract

This paper examines a specific type of litigation brought in the United States by plaintiffs against Chinese cross-border e-commerce operators through Temporary Restraining Orders (TROs), in which claims are often grounded in AI-generated content asserted as the basis of rights. Recent cases, including the “Baby Shark” dispute, are used as reference to discuss possible response approaches. From a procedural perspective, one line of defense concerns service of process under the Hague Service Convention and China’s related reservations. On this basis, it is often argued that service may not be properly effected, and that email-based service of a TRO on defendants located in China does not necessarily carry legal validity. From a substantive perspective, challenges may be raised regarding the copyrightability of AI-generated content. In particular, plaintiffs may need to demonstrate a sufficient degree of human involvement in the creation of the works in question. In addition, settlement decisions require careful evaluation in practice. In some situations, prioritizing litigation defense rather than early settlement may help avoid inflated settlement expectations by the opposing party. At the operational level, maintaining documentation of product design processes and authorization records is commonly viewed as important evidence for potential disputes. Taken together, these layered responses—covering procedural objections, substantive challenges, settlement considerations, and routine compliance practices—reflect a more structured defensive posture in responding to such TRO-based litigation.

Keywords

cross-border e-commerce, TRO, AI-generated content, intellectual property

1. Introduction

The 2025 First-Half China Enterprises U.S. Intellectual Property Dispute Trend Report, released in October 2025, shows that 8,874 new intellectual property lawsuits were filed in the United States in the first half of 2025. A considerable proportion of these cases involve foreign enterprises, suggesting that cross-border e-commerce operators continue to face frequent intellectual property disputes in the U.S. market [1].

Alongside this trend, the rapid development of generative artificial intelligence has contributed to a growing volume of AI-generated content. In this context, a new type of litigation has begun to emerge in cross-border

e-commerce practice, in which Temporary Restraining Orders (TROs) are obtained on the basis of alleged rights in AI-generated content. A TRO is an emergency measure issued by U.S. courts, often granted without prior notice to the defendant and typically approved within a short period of time. Once issued, it may result in the immediate freezing of accounts and removal of product listings, with defendants often becoming aware of the dispute only after enforcement has already begun.

Whether AI-generated content can be protected as a “work” under copyright law remains an unsettled issue. The U.S. Copyright Office, in its Copyright Registration Guidance: Works Containing Material Generated by Artificial Intelligence, clarifies that copyright protection is limited to works created through human authorship [2]. In *Thaler v. Perlmutter*, the court upheld the Copyright Office’s refusal to register AI-generated images, reinforcing the requirement of human authorship as a prerequisite for copyright protection [3]. At the same time, when AI tools are used in the creative process, there is still no consistent standard in legal theory or judicial practice regarding whether activities such as prompt design or parameter adjustment are sufficient to establish authorship.

Existing research on responses to TROs has rarely addressed cases where the asserted rights are based on AI-generated content. Against this backdrop, the present study connects these two strands of issues, focusing on the procedural pressure created by TRO mechanisms and the resulting constraints on substantive defense in practice. It further discusses how operators may respond when facing TRO-based litigation grounded in AI-generated content, particularly in terms of preserving the ability to raise substantive defenses despite procedural constraints.

2. Legal Basis for Procedural and Substantive Defenses

In responding to TROs involving AI-generated content as the asserted basis of rights, the relevant legal issues are often discussed from two closely related perspectives: procedural requirements governing cross-border service of process, and substantive standards concerning copyright protection and human authorship. The discussion below focuses first on procedural issues arising from international service rules.

2.1 Service Rules in International Judicial Assistance

Although TRO proceedings are designed as a form of emergency relief, they remain subject to basic procedural constraints, particularly in the context of cross-border litigation where service of process implicates questions of jurisdiction and state sovereignty. Under China’s Civil Procedure Law, judicial assistance in civil matters must be conducted in accordance with international treaties to which China is a party. In this framework, the Hague Service Convention serves as the primary legal instrument governing cross-border service among contracting states. Upon accession, China declared its objection to alternative methods of service such as postal service. As a result, service of judicial documents on defendants located in China is generally required to proceed through the Central Authority mechanism established under the Convention [4].

A relevant reference point can be found in the decision of the U.S. Court of Appeals for the Second Circuit in *SmartStudy Co., Ltd. v. Acuteye-US et al.* (the “Baby Shark” case), issued on December 18, 2025. In that case, the court held that service of judicial documents on defendants in China via email did not satisfy the requirements of the Hague Service Convention. The court further noted that China’s objection to alternative service methods extends to forms of service functionally equivalent to postal channels, and that email-based service cannot be treated as compliant under the Convention framework. On this basis, service of TRO-related documents solely through email was found to be legally insufficient [5].

This reasoning suggests that even in expedited proceedings such as TRO applications, compliance with applicable international service rules remains necessary. Where service is effected only through email without recourse to the Convention’s prescribed channels, defendants may raise procedural objections based on improper service.

2.2 Human Authorship Requirement in the Copyrightability of AI-Generated Content

Since the early development of U.S. copyright law, protection has been closely tied to human intellectual activity. The U.S. Copyright Office, in its Copyright Registration Guidance: Works Containing Material Generated by Artificial Intelligence, reiterates that copyright protection extends only to material that reflects

human creativity [2]. This position was reinforced in *Thaler v. Perlmutter*, where the U.S. District Court upheld the Copyright Office's refusal to register AI-generated images, emphasizing that human authorship remains a core requirement for copyright protection [3].

Difficulties arise, however, when AI tools are incorporated into the creative process. From the perspective of copyright doctrine, creation generally presupposes that expressive content can be traced to the author's exercise of free and deliberate intellectual choice [6]. In practice, there is ongoing debate over whether actions such as writing prompts, adjusting parameters, or selecting outputs are sufficient to meet this threshold. One line of argument notes that identical prompts may generate substantially different outputs across different systems. This variability raises questions about whether user input can be understood as directly determining the final expressive form of the work, or whether the output is primarily shaped by the internal logic of the system rather than the user's will [6].

On this basis, some commentators distinguish between ideas and expression, arguing that prompt input is more closely related to the former, while copyright protection attaches only to the latter. From this perspective, merely providing prompts without further creative intervention is generally considered insufficient to satisfy the originality requirement.

At the same time, it is also acknowledged that human involvement in the iterative use of AI tools may, in certain circumstances, reach the threshold of protectable authorship. Cases such as *A Single Piece of American Cheese*, where copyright registration was granted after multiple rounds of modification, and the Copyright Office's treatment of *Zarya of the Dawn*, which recognized the protectability of human selection and arrangement of AI-generated images as a compilation work, illustrate this more nuanced approach [7]. These examples suggest that copyrightability is not categorically excluded in AI-assisted creation, but rather depends on the extent and nature of human contribution.

In light of this framework, disputes typically turn on the evidentiary question of whether meaningful human contribution can be demonstrated. Where plaintiffs rely on AI-generated content as the basis of copyright claims, defendants may request supporting materials such as prompt histories, iteration records, and selection criteria in order to assess the degree of human involvement. If such evidence is insufficient, the existence of a copyright registration alone may not necessarily establish a stable and enforceable right.

3. The Dilemma of Substantive Defense Under Procedural Oppression

From a doctrinal perspective, in disputes involving AI-generated content, the plaintiff is generally expected to bear the burden of demonstrating the extent of human contribution underlying the asserted work. In principle, this allocation of burden should provide a potential basis for substantive defense by defendants. However, in the context of TRO litigation, this evidentiary structure often does not function in a straightforward manner in practice.

TRO proceedings are characterized by unilateral application and expedited judicial review. In many cases, plaintiffs are able to obtain a court-issued restraining order shortly after filing the complaint, which is then enforced through platform-level account freezes. At this stage, the defendant's business operations are typically already disrupted, even though formal service of process may not yet have been completed.

With regard to service of process, plaintiffs frequently resort to email service for judicial documents. Although the legal validity of such service may be subject to dispute depending on jurisdictional interpretation, this method is still used in practice due to its speed and low cost, and in some cases has been accepted by certain U.S. courts. At the same time, many cross-border e-commerce operators are not fully familiar with U.S. procedural rules, including potential objections based on improper service. These conditions create an environment in which procedural and informational asymmetries may affect the defendant's ability to respond within the 21-day response period.

Within this limited timeframe, defendants are often required to deal simultaneously with account restrictions, business disruption, and the need to obtain legal assistance in a foreign legal system. Under such constraints, assessing the validity of service and preparing procedural objections may not always be prioritized. In practice, some defendants may opt for early settlement as a means of restoring account access. Reported

settlement amounts are often described as ranging between 10% and 60% of the frozen funds, and in some cases may be higher [8].

From a procedural standpoint, if a defendant challenges the validity of service, the plaintiff may be required to re-initiate service through the Central Authority mechanism under the Hague Service Convention. This process is generally more time-consuming and may extend litigation timelines significantly. As a result, procedural objections may have the effect of increasing litigation costs for plaintiffs, which is a factor that may influence litigation strategy.

Overall, the specific difficulty in TRO cases involving AI-generated content does not lie solely in the substantive copyright issues, but also in the interaction between expedited procedural mechanisms and cross-border information asymmetry. These factors may affect the practical ability of defendants to fully exercise substantive defenses within the available response period. In this context, time constraints become a critical variable in shaping litigation outcomes. Accordingly, response strategies are often discussed in terms of how additional time can be secured within the procedural framework.

4. Layered Response Strategies

4.1 Procedural Defense Based on Service Issues

When a TRO notice is received, a first practical issue concerns the method of service within the 21-day response period. In cases where service is effected only through email and there is no indication of transmission through the Central Authority under the Hague Service Convention, defendants may consider raising a procedural challenge before the U.S. court regarding the validity of service. The “Baby Shark” decision provides a relevant reference within the Second Circuit, where email-based service on Chinese defendants was found not to comply with the Convention requirements. It should be noted, however, that this interpretation is not uniformly adopted across all jurisdictions. In other circuits, such as the Eleventh Circuit, email service may still be accepted under certain circumstances.

Even in jurisdictions where email service is not categorically excluded, defendants may still argue that proper service under the Hague Convention has not been completed, and may also raise objections related to personal jurisdiction. In practice, procedural objections of this kind are generally addressed prior to substantive issues, which may have the effect of affecting the procedural timeline of the case and, in some situations, creating additional time for response.

From a litigation perspective, such procedural motions are typically limited to service and jurisdictional questions and do not engage with the underlying infringement dispute. Their relative procedural simplicity, compared with merits-based arguments, may also influence how parties allocate litigation resources and consider settlement dynamics.

4.2 Substantive Defense Based on the Validity of Rights

If procedural objections are not successful or if service is later corrected, the dispute generally proceeds to substantive issues. A key line of defense concerns the copyrightability of AI-generated content. In this context, discovery requests may be used to seek information regarding the plaintiff’s creation process, including AI tools used, prompt history, parameter adjustments, iteration records, and any human selection or arrangement activities. The evidentiary focus in such disputes typically lies in whether the plaintiff can demonstrate sufficient human contribution to satisfy the requirements of copyright protection. Where such evidence is lacking or incomplete, defendants may argue that the requirements for originality and human authorship are not met, and that the legal basis for injunctive relief is therefore weakened. In some cases, courts may be asked to reconsider the strength of the asserted rights or the basis for preliminary relief in light of such evidentiary gaps.

4.3 Assessment of Settlement Considerations

In cross-border e-commerce disputes, litigation costs and procedural uncertainty are often important factors in decision-making [9]. Settlement is sometimes considered within this broader context rather than as a purely

legal outcome. The relative attractiveness of settlement may vary depending on the size of the frozen assets and the expected cost of continued litigation.

Where the frozen amount is relatively limited, litigation expenses may exceed the disputed amount, making early settlement a more pragmatic option. Where the frozen amount is substantial but settlement demands are relatively moderate, settlement may still be considered as a means of restoring business operations and reducing ongoing losses associated with account suspension. Conversely, where settlement conditions are disproportionately high or where there is a stronger expectation of a successful defense, continued litigation may be preferred [10]. In practice, procedural and substantive defenses are often developed in parallel with settlement discussions, as both processes influence the overall bargaining position of the parties.

4.4 Compliance in Daily Operations

From a preventive perspective, maintaining documentation of product development and authorization is widely regarded as an important aspect of compliance in cross-border e-commerce operations. Relevant materials may include design drafts, revision records, product listing timelines, designer attribution, and intellectual property authorization documents obtained from suppliers. In subsequent disputes, such materials may serve as supporting evidence regarding the origin of the products and the legitimacy of their source. At the same time, where plaintiffs are unable to provide comparable levels of creation records for the asserted rights, questions may arise regarding the evidentiary strength of their claims.

5. Conclusion

This study focuses on a relatively recent form of litigation in which plaintiffs rely on AI-generated content as the asserted basis of rights and make use of TRO procedures to bring actions against Chinese cross-border e-commerce operators, with attention given to the procedural constraints faced by defendants in responding to such cases.

At the level of legal doctrine, the copyrightability of AI-generated content remains unsettled, particularly due to the requirement of human authorship. In order to obtain copyright protection, plaintiffs are generally expected to demonstrate a meaningful degree of human contribution, which in turn provides a potential basis for defendants to challenge the validity of the asserted rights. In parallel, under the Hague Service Convention and China's declaration upon accession, alternative service methods such as postal service are excluded. The reasoning in the "Baby Shark" case further indicates that service of process on defendants in China via email alone is not sufficient under the Convention framework, which may support procedural objections raised by defendants.

At a practical level, TRO proceedings tend to create a compressed litigation environment characterized by strict time limits, relatively high costs, and uneven access to procedural information. Within this setting, the space for defendants to fully engage in substantive defense may be constrained, and responses are often shaped by procedural urgency.

In terms of possible responses, discussions in this area generally distinguish between procedural and substantive approaches. Procedural objections based on improper service are often considered first, while substantive challenges focus on requesting disclosure of creation-related materials in order to assess the strength of the plaintiff's copyright claim. In addition, settlement decisions are frequently made in light of litigation costs and operational pressures, while documentation of product design and authorization is commonly treated as part of routine risk management for potential disputes.

Overall, in TRO cases involving AI-generated content, litigation outcomes are not determined solely by substantive copyright issues, but are also closely related to procedural timing and information conditions. The interaction between these factors affects how defenses are actually exercised in practice. Further research may continue to follow how the "Baby Shark" line of reasoning is applied in other jurisdictions, as well as ongoing developments in the standards used by U.S. authorities to assess the copyrightability of AI-generated works.

References

- [1] Beijing Haitong International Intellectual Property Research Institute, & Yilian (Suzhou) Technology Co., Ltd. (2025). Report on trends in intellectual property disputes involving Chinese enterprises in the United States in the first half of 2025 [Research Report]. Beijing Haitong International Intellectual Property Research Institute.
- [2] U.S. Copyright Office. (2023, March 16). Copyright registration guidance: Works containing material generated by artificial intelligence (88 FR 16190). Federal Register. <https://www.federalregister.gov/documents/2023/03/16/2023-05321/copyright-registration-guidance-works-containing-material-generated-by-artificial-intelligence>.
- [3] Thaler v. Perlmutter, 687 F. Supp. 3d 140 (D.D.C. 2023).
- [4] Standing Committee of the National People's Congress. (1991). Decision of the Standing Committee of the National People's Congress on approving the accession to the convention on the service abroad of judicial and extrajudicial documents in civil or commercial matters [Statute].
- [5] Smart Study Co., Ltd. v. Acuteye-US, No. 24-313 (2d Cir. Dec. 18, 2025).
- [6] Wang, Q. (2023). Re-discussing the characterization of artificial intelligence generated content in copyright law. *Tribunals of Political Science and Law*, 41(4), 27-39.
- [7] U.S. Copyright Office. (2023, February 21). Cancellation of registration for Zarya of the Dawn (VAu001480196) [Administrative Decision]. Review Board of the United States Copyright Office.
- [8] Chen, J. S., & Yuan, S. H. (2021). Analysis of typical cases of intellectual property infringement TRO injunctions in export cross-border e-commerce. *Commercial Economy*, (01), 155-157+177. <https://doi.org/10.19905/j.cnki.syjj1982.2021.01.050>.
- [9] Yi, J. M. (2021). Coping with intellectual property risks in cross-border e-commerce: Taking Chinese e-commerce sued in the United States as an example. *Intellectual Property*, (1), 45-58.
- [10] Wan, L. (2025). Research on the causes and coping strategies of intellectual property disputes in China's export cross-border e-commerce. *China Business & Trade*, (20), 24-27.

Funding

This research received no external funding.

Conflicts of Interest

The authors declare no conflict of interest.

Acknowledgment

This paper is an output of the science project.

Copyrights

Copyright for this article is retained by the author (s), with first publication rights granted to the journal. This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).