

Copyright Infringement Liability of NFT Digital Artwork Platforms

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Abstract: The development of information technology and the evolution of laws have given rise to new issues and disputes in the determination of platform responsibilities in cases of disputes over internet dissemination rights. With the advancement of the blockchain industry, the Hangzhou Internet Court in China has determined that NFT digital artwork platforms can be deemed as aiding infringement in copyright disputes. This article aims to clarify the role played by platforms in infringement cases by analyzing the technical characteristics of NFT digital artwork platforms. It will also discuss factors in determining the liability of NFT digital artwork platforms based on judicial practices, thereby elucidating the principle of "notice + necessary measures" applicable to these platforms.

Keywords: NFT Digital Artwork; Platform Responsibility; Indirect Infringement; Necessary Measures.

1. Introduction

The Hangzhou Internet Court publicly tried and ruled on China's first case of NFT (Non-fungible Token) digital artwork copyright infringement [1] (referred to as the "NFT First Case"). The NFT digital artwork involved in this case represents a burgeoning industry derived from China's current metaverse and blockchain technology development. Against the backdrop of lacking legal provisions specifically addressing NFT digital artworks, the trial of this case tentatively analyzed the nature of NFT digital artworks, the attributes of NFT digital artwork platforms, and the legal elements involved in determining liability and halting infringement, laying the judicial groundwork for the future legal regulation of internet technologies and blockchain industry models in China.

Simultaneously, the potential growth of the NFT digital artwork industry has spurred major internet companies to develop NFT digital artwork platforms that assist creators in packaging their works into on-chain NFT assets, providing creators with one-stop storage, promotion, and sales services. In the future, civil liability in copyright infringement disputes on NFT digital artwork platforms will inevitably become part of the platform's compliance business.

NFT digital artwork platforms combine blockchain and smart contract technologies. The process of "minting" regular works into NFTs on the platform inevitably involves copyright issues. The most common infringement on the platform is direct infringement of works. This occurs when the "minter" on the NFT digital artwork platform is not the genuine author or authorized licensee of the uploaded work and engages in acts prohibited by the owner of the work: uploading someone else's work to the NFT digital artwork platform without the copyright owner's permission, involving copying and online dissemination of NFT works, which does not qualify under statutory exemptions. In summary, the subjects of direct infringement include the digital artwork uploader and the online disseminator of NFT works.

Infringement of copyright can be categorized as direct or indirect. Indirect infringement refers to direct infringement actions committed by a third party with a certain relationship

to the defendant, where the relationship between the third party and the defendant is sufficient to justify imposing such derived liability on the defendant. The aforementioned infringing acts, facilitated by the technology provided by the NFT digital artwork platform, have made the platform's liability contentious. The "NFT First Case" ruled that NFT digital artwork platforms naturally bear a high duty of care over the copyright ownership of works on the platform, constituting assistance to the infringement by the work uploader.

Therefore, although the platform is not a direct actor, as the provider of "minting" technology, what legal position does it assume throughout the entire infringement process? Does the technology it provides constitute indirect infringement? Why can't NFT digital artwork platforms prove, like other internet service providers, that they have taken necessary measures to apply the "notice and takedown principle" to exempt themselves from liability for infringement?

2. NFT Digital Artwork Platforms' Role in Infringement

(1) Technological Service: NFT Tokenization of Artworks

Before exploring the copyright infringement responsibilities of NFT digital artwork platforms, it's necessary to understand the characteristics of the services they provide to determine the role the platforms play throughout the infringement process.

Firstly, the platform offers foundational blockchain technology, which is a type of distributed ledger technology (DLT). This technology involves uploading data onto the chain, synchronized, replicated, and stored across various nodes within the system, where nodes operate the system based on DLT protocols and collect, store, and share data. Essentially, this system adopts a decentralized design, where data on the system is unanimously recognized by each node and stored across nodes in a chain-like structure, commonly known as "on-chain."

Secondly, the platform provides the technology to tokenize artworks into NFT products. Rights holders "mint" works into NFTs, creating effects of "uniqueness" and "scarcity." The

scarcity of NFT digital artworks originates from the transaction conditions set during minting.

Lastly, the platform offers underlying execution technologies for NFT digital artwork transactions — smart contracts. Smart contracts are self-executing programs on the blockchain. Specifically, for buyers on NFT trading platforms, upon finding a digital artwork of interest, the buyer pays the price and service fees via a digital wallet, becoming the public owner of the digital artwork displayed on the platform. Simultaneously, the "automatic execution" code embedded in the smart contract is triggered, generating new owner information on the blockchain.

In summary, NFT digital artwork trading platforms leverage blockchain technology to tokenize digital music, digital photos, digital images, video animations, and physical form artworks for sale.

(2) Transaction Service: Transfer of NFT Digital Artwork Ownership

Based on the analysis of services provided by NFT digital platforms, NFT digital artwork transactions differ from digital artwork transactions in terms of the rights object. The latter refers to creative works produced using digital technology and presented through digital media such as videos, music, and visually artistic pieces created using computer software, including but not limited to illustrations, photographs, animations, vector graphics, and video game art. In contrast, the former does not involve creative production but rather tokenizes artworks into NFTs using blockchain technology, encompassing both digital works and physically tangible works such as physical paintings, photos, vinyl records, and 3D models. Consequently, discussions about traditional copyright disputes are inevitable in NFT digital artwork transactions, given their technological attributes and exploration of new transaction objects.

Scholars liken the relationship between digital works and NFT digital artworks to that of a fine art piece and a scarf printed with the fine art piece. However, the traditional reproduction medium for artworks is the scarf, whereas NFT serves as a credential for each unique digital reproduction. [2]

At this point, the NFT digital artworks traded on platforms are not mere copies but artworks existing in NFT form within the trading platform.

(3) Legal Position: Network Service Provider

Accordingly, considering the technological and transactional services provided by NFT digital artwork platforms, including foundational blockchain and smart contract technologies, the "minting" technology collects, stores, and shares uploaded data, transforming artworks into uniquely marked, creatively original metadata existing in digital form. The platform's technology results in the replication of works on the network and, due to the public trading mode, allows works to be disseminated on the internet at specified times and locations, affecting the transmission rights of the artworks.

NFT digital artwork platforms specialize in providing services for trading NFT digital artwork ownership and do not directly participate in the replication of content from other platforms to theirs, thus not falling under content provider platforms (UGC platforms). Additionally, because the "minters" of digital works on the platform are registered platform users, and the platform does not engage with others in NFT digital artwork transactions through collaborative efforts, they do not constitute knowing co-infringers. In summary, the platforms neither qualify as content provider

platforms nor as collaborators in infringement but rather as network service providers.

China's most comprehensive classification of network service providers is outlined in the "Regulations on the Protection of the Right to Information Network Dissemination" (hereinafter referred to as the "Internet Regulations") and its judicial interpretations, categorizing network service platforms into four major types: automatic access and automatic storage service providers, storage space service providers, automatic transmission service providers, and search or link service providers.

Due to the complexity and comprehensiveness of NFT digital artwork platform functionalities, they are challenging to classify under existing legal frameworks, akin to the ruling in the "NFT First Case," which states, "NFT digital artwork platforms belong to network service providers providing automatic access, automatic transmission, information storage space, search, linking, file-sharing technologies, and other network services."

3. Indirect Infringement Determination on Digital Art Platforms

In the "First NFT Case" handled by the Hangzhou Internet Court, the NFT digital art platform was recognized as an internet service provider. However, the act of its users uploading unauthorized works constituted direct infringement, thereby making the platform complicit in the infringement. Complicity in infringement falls under the category of indirect copyright infringement, which refers to enabling another person to commit direct copyright infringement due to negligence.

Article 7, Section 3 of the "Judicial Interpretation on Internet Copyright Infringement" explicitly defines acts of complicity in infringement, stating that when a service provider knows or should know that a network user is using their services to infringe on internet dissemination rights, and they fail to take necessary measures such as deletion, blocking, or disconnecting links, or provide technical support, this constitutes complicity. Additionally, Article 1197 of the Civil Code of the People's Republic of China stipulates that if a network service provider fails to take necessary measures, they bear joint liability with the network user for the infringement. Therefore, internet service providers are subject to a fault-based liability principle for the copyright infringements of network users.

In the context of copyright law, fault mainly manifests as "should have known but did not know (should know)" and the repeated mention in judicial practice of "reasonable duty of care." Our legislation, such as the "Judicial Interpretation on Internet Copyright Infringement," specifies the types of faults attributed to internet service providers and outlines objective criteria for determining whether they should have known. Despite having these judicial interpretations as a basis, determining the infringement liability of NFT digital art platforms remains a challenge. Below, we will analyze the criteria for determining complicity in infringement using the "First NFT Case" as an example.

(1) Visibility of Infringing Information

Article 9, Item 2 of the "Judicial Interpretation on Internet Copyright Infringement" identifies whether an internet service provider should have known based on "the type, popularity, and visibility of the works, performances, or audio-visual recordings being disseminated, and the visibility

of the infringing information." Generally, this provision primarily addresses popular works. If a platform fails to detect infringement during the upload review process for well-known works, they are likely to be deemed as "having known."

In the "First NFT Case," it was established that the allegedly infringing work was clearly identifiable due to its origin. The accused platform did not conduct any review process, leading to the subjective determination that the platform should have known about the infringement, thus exhibiting negligence. According to the factual part of the court documents, the disputed work "Pang Hu Vaccination" carried a watermark of "不二马大叔(Uncle Duoma)" in the lower right corner after being minted. Ordinary users online could easily identify the work's origin from this watermark. Moreover, the accused account XX directly stated in the "Artist Introduction" section that the artist was "不二马大叔(Uncle Duoma)," indicating clear evidence of the infringement. The court pointed out that the platform failed to conduct any review, fulfill its duty of care, or request preliminary evidence from registered users regarding the rights holder of the disputed work "Pang Hu Vaccination" or verify the relationship between the registered user XX and the artist "Uncle Duoma" as indicated in the work.

However, the review of works is not a mandatory duty performed by internet service providers. According to Article 8 of the "Judicial Interpretation on Internet Copyright Infringement," the fault of an internet service provider includes knowing or should knowing about a network user's infringement of internet dissemination rights. If the internet service provider does not actively review a network user's infringement of internet dissemination rights, the court should not use this as a basis to determine fault.

The uniqueness of this platform lies in its prior establishment of a review process. Despite the clear potential for infringement in certain works, the platform failed to conduct a thorough inspection of the works. The NFT digital art platform requires artworks to undergo platform review before being minted; merely uploading an artwork does not complete the NFT minting process. Only artworks that pass the review can be listed for sale as NFTs on the platform. Given that the platform has established a review process for works, it should fulfill its duty of care by inspecting the origin of artworks, verifying ownership and licensing permissions to prevent copyright infringement incidents on the platform. Particularly, in cases where there is significant evidence of ownership associated with certain works, a lack of scrutiny by the platform constitutes significant negligence.

(2) Platform's Management Information Capability

Article 9, Item 1 of the "Judicial Interpretation on Internet Copyright Infringement" stipulates whether an internet service provider should have known: "Based on the nature, manner, and potential impact of the services provided by the internet service provider on infringement, the provider should possess the ability to manage information." However, in current practice, the legislation lacks a definitive element of "control capability."

Examining the "First NFT Case," the court found that the platform exhibited strong control capability over the minting process of NFT digital artworks. Although the minting process irreversibly embeds metadata onto blockchain nodes, the platform controls the entire process and all content from when a user uploads a work until the NFT minting is completed. Moreover, given the unique nature of its services,

the platform does not handle mass volumes of content like other UGC platforms. Therefore, the court determined that the platform has significant control over the NFT digital artworks traded on its platform, possesses corresponding review capabilities and conditions, and does not incur additional control costs.

Under what circumstances can one be considered incapable of controlling others' infringements? In the era when reproducing and disseminating works required tangible physical mediums, the High Court of Australia, in the Blank Tape Sales Case, noted that even if the defendant (blank tape seller) knew or should have known that the blank tapes they sold might be used for infringement, they lacked the capability to prevent buyers' infringing actions. [3] Therefore, the defendant had fulfilled a reasonable duty of care (or the requirement to prevent infringement by buyers was unreasonably high), and hence, they were not liable for aiding infringement.

Comparatively, the physical nature of tapes renders them beyond the seller's control after sale. Although NFT digital art platforms have certain management capabilities before artwork sales, they can prevent public dissemination during the upload-to-trade process.

Therefore, the determination of platform control capability primarily relies on whether the platform possesses technical control to restrict the dissemination of infringing works. According to existing platform minting agreements, platforms have strong control over the public dissemination and management of NFT digital artworks during the minting process. If a platform has management capabilities but fails to fulfill its management responsibilities, it may be deemed negligent for knowing about the occurrence of copyright infringement.

(3) Direct Profits of Platforms

Article 11, Paragraph 1 of the "Interpretation of Judicial Issues Related to Internet Copyright" states: "Where a network service provider directly obtains economic benefits from works, performances, or recordings provided by network users, the People's Court shall determine that the provider has a higher duty of care for infringement of the information network transmission rights of these network users." The subsequent paragraph further elaborates on the "direct economic benefits," including revenue generated from placing advertisements or other specific economic benefits associated with such activities. However, it excludes situations where network service providers charge general advertising fees or service fees.

Legislatively, China's judicial interpretation regarding "direct profit" is derived from Section 512 of the U.S. Digital Millennium Copyright Act (DMCA), but a comprehensive standard for determining "direct profit" in terms of infringement has yet to be established. Furthermore, in judicial practice, the absence of profit does not exempt liability for online infringement, and "direct profit" is not a condition for attribution. [4]

However, courts use a lower standard to determine a platform's "direct profit," lacking a judgment on whether the platform charges general advertising fees or service fees for providing network services, thus requiring network service providers to bear a "higher duty of care."

NFT digital artwork platforms provide services that are not free but involve certain fees. According to platform agreements, the "minting" technology service provided by the platform incurs a gas fee. To generate an NFT digital artwork,

one must first pay the platform an NFT "minting" service fee via a digital wallet, after which the artwork is minted and automatically recorded in a blockchain smart contract. NFT digital artworks are essentially uniquely marked, creatively original metadata existing in digital form. In summary, before an artwork is presented in NFT form, the creator must pay the platform a fee for the "minting" service, enabling the artwork to become a virtual commodity executable based on a smart contract.

The gas fee collected by the platform is mainly paid to blockchain nodes to process transactions in cryptocurrency. Depending on the blockchain integrated by the NFT digital artwork platform, different fee standards may apply. Additionally, some NFT digital artwork platforms not only charge a gas fee during minting but also collect a certain percentage of commission and gas fee after each successful transaction. For instance, the overseas platform Opensea charges a fixed 2.5% platform service fee on every transaction conducted by creators or issuers using its platform features, with creators or issuers setting royalties for each transaction themselves.

In summary, the standard for determining whether a platform is "directly profiting" not only involves whether it charges fees but also assesses whether the fees collected are necessary for maintaining network services. If it is proven that the fees collected by an NFT digital artwork platform are solely for paying blockchain node gas fees, then such fee collection should fall under the exemption for collecting necessary service fees for providing network services. However, if the fees collected significantly exceed those paid to blockchain nodes, it would indicate clear profit-making behavior, necessitating the platform to bear a "higher duty of care" for infringement.

(4) Platform Ecosystem

The entire trading model of NFT digital artwork platforms adopts smart contract technology. Smart contracts are a novel form of contract where contract terms are written in computer programming language, automatically executing preset conditions. [5] Smart contracts, as a carrier of agreed transactions on platforms, automatically trigger and complete transactions embedded in "self-executing" code, facilitating copyright transfer transactions and resolving trust and security concerns among transaction parties, constructing a new network trading integrity system.

However, technical vulnerabilities in computational paradigms may lead to illegal outcomes from smart contract execution. Repeated occurrences of copyright infringement issues on NFT digital artwork platforms can impact the development of this new type of artwork trading platform. Therefore, as a neutral third-party platform, before establishing smart contracts, platforms should meticulously verify the underlying ownership of NFT digital artworks to prevent irreversible issues post-infringement.

In conclusion, taking the "First NFT Case" as an example, if users upload infringing works on NFT digital artwork platforms and spread them in a public network environment, the platform's complicity in aiding infringement requires the following: Firstly, the platform should technically prevent users from sharing infringing works (e.g., through pre-listing audits); Secondly, the platform should not fail to employ such technical measures, particularly in cases of highly significant infringement; Thirdly, consideration should be given to the platform's service model and its relationship with users, where it provides technical services for a fee and directly

profits during infringement; Fourthly, NFT digital artwork platform smart contracts, premised on honest transactions, necessitate platforms to adopt necessary measures for maintaining operational integrity. Thus, if current NFT digital artwork platforms exhibit the aforementioned situations, they should bear a higher duty of care, being aware of specific circumstances of user infringement and failing to take necessary measures to prevent or restrict such infringement.

4. Necessary Measures for NFT Digital Artwork Platforms

In regulating online infringement, the "notice and takedown" rule has played a significant role. Nowadays, new types of internet service providers are subject to the "notice plus necessary measures" approach, where the definition of "necessary measures" is open and flexible. The appropriateness of these measures depends on their alignment with specific internet services and can be determined in a way that balances interests based on the circumstances of the service provider.

The following will determine the "necessary measures" to be adopted based on the characteristics of NFT digital artwork trading as a new type of internet service and the needs of industry development.

(1) Prior to Artwork "Minting": Copyright Ownership Review

The obligation to review means that service providers must actively take reasonable measures to individually review video files uploaded by users and verify whether the uploaders possess legitimate and complete authorization documents. [6] Internationally, neither the EU nor the US generally mandates service providers to conduct proactive reviews. [7] Chinese legislation also specifies that network service providers are not obligated to review the legality of users' uploaded content. According to Article 8 of the "Interpretation of Judicial Issues Related to Internet Copyright," network service providers' fault includes being aware or should be aware of acts that infringe on the information network transmission rights of network users. If a network service provider fails to proactively review users' acts of infringing on the information network transmission rights, the People's Court should not consider this as fault. Only some administrative regulations, such as the "Notice on Regulating the Copyright Order of Network Disk Services" issued by the National Copyright Administration, require network service providers to review the content of key-regulated works. At the operational level, general pre-review can bring about high costs. However, as Judge Song Jian of the original Jiangsu Higher People's Court believes, increasing various platforms' duty of care aligns with China's current macro-policy orientation of strictly protecting intellectual property rights and is basically compatible with the scale and technological development level of large platforms at this stage.

From a technical perspective, NFT digital artwork platforms possess certain platform management capabilities. To avoid falling into the scope of aiding infringement, they must fulfill the responsibilities of general network service providers rather than adopting "passive mechanisms" for content regulation, where content is freely published by issuers (including creator users), and infringing NFT digital artworks are only removed after being reported. Therefore, effective copyright review mechanisms should be established

on current NFT digital artwork platforms.

Firstly, preliminary copyright review of NFT artworks traded on the platform, such as reviewing whether users applying for NFT minting provide preliminary evidence involving copyright manuscripts, originals, legal publications, copyright registration certificates, and certificates issued by certification organizations to prove themselves as copyright holders or related rights holders.

Secondly, the platform should specify the details of ownership proof based on its management capabilities and technological level. From the perspective of a diligent manager's duty, the platform should exercise autonomous decision-making, clarify and refine specific requirements based on its review needs, types of intellectual property rights, industry development, and other factors. In terms of judging standards, a "general possibility" standard should be adopted, meaning that this preliminary evidence should exclude clear evidence that cannot prove it to be a copyright or related rights holder's evidence that would make a general rational person believe that there is a possibility of having rights.

Lastly, the platform's review scope should be as comprehensive as possible, covering various forms of original works both online and offline. For instance, in the "First NFT Case," the defendant's platform explicitly stipulated in its network service agreement that registered users must not infringe others' intellectual property rights, conducted ownership review after users uploaded works, but did not conduct any rights review before users uploaded works. The platform's review scope was limited to checking whether there was pre-registered work registration information in the "National Work Registration Information Publicity System," which did not include tangible works offline or works publicly published and disseminated on the internet, showing clear limitations. Therefore, to prevent infringement at the source, the platform can establish an infringement prevention mechanism, form an effective screening and identification system, actively take measures such as prohibiting listing transactions for a large amount of clearly infringing content, and keep records of handling. If necessary, it can request minting users to provide a guarantee mechanism, increase the infringer's responsibility, thereby reducing the possibility of copyright defects in NFT digital artworks.

(2) Post-Notification: Sending to Address Black Hole

Article 1195 of the Civil Code of the People's Republic of China stipulates: "If a network user infringes upon the rights of others using network services, the rights holder has the right to notify the network service provider to take necessary measures such as deletion, blocking, or disconnecting links." Accordingly, when a rights holder provides preliminary evidence of infringement and issues a notification letter accurately defining the infringing content, the approach should shift towards notification plus deletion or link disconnection.

However, due to the decentralized and highly stable nature of blockchain technology, NFT digital artwork platforms cannot rapidly delete or disconnect links like centralized network service providers. NFT digital artworks based on blockchain technology utilize distributed ledger technology, wherein once artwork data is recorded on-chain, corresponding data backups exist on every node within the system. The stability of blockchain-based ledger storage prevents unauthorized alteration of digital artwork ownership. As both NFT digital artworks and their transaction-related

data are stored on blockchain servers, generally speaking, there is no consensus among blockchain nodes to facilitate deletion.

In the world of blockchain, there exists a special type of address known as a "black hole address," where tokens received cannot be withdrawn, resembling a cosmic black hole that only takes in and never releases. The unique nature of black hole addresses is often leveraged for "token burning" operations. Therefore, the legal approach to removing or disconnecting infringing NFT digital artworks from the blockchain involves sending the NFT digital artwork to a black hole address, achieving the legal effect of stopping infringement.

Upon receiving a notification, NFT platforms can promptly forward the notice to relevant network users and take necessary measures based on preliminary evidence of infringement and service type, such as sending the infringing artwork to a black hole address to render it inaccessible.

Furthermore, NFT digital artwork platforms should exercise caution in judging copyright ownership to avoid malicious takedown notices targeting NFT digital artworks. If malicious complaints on e-commerce platforms result in "complaints that cause inconvenience and costly restoration," then takedowns on NFT digital artwork platforms lead to permanent removal. Once data enters a black hole address, it cannot be recovered. When there are certain flaws in the evidence provided in a notification letter, specific issues should be analyzed accordingly. For instance, if the infringing content falls under the category of "known or should have known," or if there are numerous infringing contents that rights holders cannot list individually, platforms should carefully consider whether to request complainants to supplement their complaints instead of rejecting the notification due to incomplete evidence. Generally, upon receiving a notification, platforms should promptly forward it and simultaneously verify the complaint's details on the business side, promptly removing infringing content that can be accurately identified.

5. Conclusion

NFT digital artwork platforms based on blockchain and smart contract technology represent a new breed of internet service providers driven by technological advancements. With the shift in the liability of network service providers from "notice and takedown" to "notice plus necessary measures" in cases of infringement, the "necessary measures" that platforms undertake should adhere to principles of caution and reasonableness. These measures should be determined comprehensively based on the nature of the infringed rights, specific circumstances of the infringement, and the technical capabilities and conditions of the network service provider.

NFT digital artwork platforms should leverage their platform management capabilities to strengthen copyright ownership reviews before "minting" NFTs, thereby avoiding obvious infringement issues. Furthermore, upon receiving infringement notifications, careful examination of evidence should be conducted, and NFT digital artworks confirmed to be infringing should be sent to address black holes to prevent the spread of infringement consequences.

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