

Copyright law and non-fungible tokens: experience from China

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ABSTRACT

While the popularity of non-fungible tokens (NFTs) has brought significant profits, legal practitioners have been exposed to unanswered legal concerns behind the frenzy of NFT transactions. Generally, such concerns include those related to the applicability of copyright to NFTs, the legal relationship between an NFT and the tokenized work, and the copyrights associated with the NFT in transactions. The Hangzhou Internet Court released the first NFT-related copyright case, setting a course for the subsequent judicial and business practice of IP-related NFTs nationally and internationally. With these general considerations in mind, the paper briefly introduces what non-fungible tokens are and how they relate to copyright law. Specifically, by interpreting the first NFT-related copyright decision in detail, the paper addresses the legal status of NFT and NFT transactions from the perspective of Chinese Copyright Law, with particular focus on the liability of online platforms and the applicability of the exhaustion doctrine.

KEYWORDS: non-fungible tokens, Chinese copyright law, platform liability, digital exhaustion, resale royalty right

INTRODUCTION

In March 2021, Christie's auction house sold an NFT digital collage by American artist Beeple for the staggering price of \$69.3 million, gaining widespread popularity and leading to a significant explosion in the NFT market. However, just as the above mosaic collection, which has been created daily for over 5000 days since 2007, has taken over 13 years to amass, neither have NFT-related products become trendy overnight. Even though the first NFT was minted in 2014,¹

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¹ Cascone S, 'Sotheby's Is Selling the First NFT Ever Minted—and Bidding Starts at \$100' (Artnet News, 7 May 2021) <<https://news.artnet.com/market/sothebys-is-hosting-its-first-curated-nft-sale-featuring-the-very-first-nft-ever-minted-1966003>> accessed 30 August 2022.

it was the widespread application of the ERC-721 standard developed for the Ethereum blockchain that coincided with NFT projects that brought NFTs to public prominence.² In June 2017, Larva Labs pioneered the first major economic experiment, a project called CryptoPunks, which set the foundation for the modern CryptoArt movement of today.³ Following the success of CryptoPunks, the first ERC-721 standard-based virtual game, CryptoKitties, has risen to prominence, allowing players to trade, collect, and breed unique digital cartoon versions of cats in the form of NFTs.⁴

Since early 2020, the public's awareness of non-fungible tokens (NFTs) has risen dramatically due to their extensive and successful application in digital content transactions, particularly the transaction of various types of digital artworks. Countless eye-catching headlines concerning the sale of NFTs continuously refresh the public's perception of their potential value.⁵ By the end of 2021, the total market capitalization of NFTs had surpassed \$25 billion US dollars, a more than 200-fold increase from 82.5 million dollars in 2020.⁶ In addition, an increasing number of global investors, including major brands and celebrities, are expeditiously getting involved in this exploding market.⁷

Chinese investors are no exception, and they proactively follow this lucrative trend through various approaches. Domestic auction houses joined the 'gold rush' pioneered by major art dealers such as Christie's and Sotheby's, organizing a number of NFT artwork auctions.⁸ Furthermore, several exhibitions and summits of artwork NFTs were held in Beijing and Shanghai, unveiling NFT's mystery to considerable Chinese investors.⁹ Tech giants had already launched their own NFT projects, and even embarked on a metaverse-related trademark and patent race.¹⁰ The number of Chinese NFT digital collection platforms has risen dramatically to over 500 in June 2022, a five-time increase from January 2022,¹¹ and the momentum continues unabated. Tech companies like Tencent and Alibaba have launched NFT trading platforms,

² Regner F, Urbach N and Schweizer A, 'NFTs in practice—non-fungible tokens as core component of a blockchain-based event ticketing application' (2019) ICIS 2019 Proceedings 1, 2.

³ '10 Things to Know About CryptoPunks the Original NFTs' (CHRISTIE'S, 8 April 2021) <<https://www.christies.com/features/10-things-to-know-about-CryptoPunks-11569-1.aspx>> accessed 30 August 2022.

⁴ Serada A, Sihvonen T and Harviainen JT, 'CryptoKitties and the new ludic economy: How blockchain introduces value, ownership, and scarcity in digital gaming' (2021) 16 Games and Culture 457.

⁵ Reyburn S, 'Art's NFT Question: Next Frontier in Trading, or a New Form of Tulip?' (The New York Times, 30 March 2021) <<https://www.nytimes.com/2021/03/30/arts/design/nft-bubble.html>> accessed 30 August 2022; 'What are NFTs and why are some worth millions?' (BBC News, 23 September 2021) <<https://www.bbc.com/news/technology-56371912>> accessed 30 August 2022.

⁶ <<https://www.statista.com/statistics/1291885/art-blocks-nft-market-cap/>> accessed 30 August 2022.

⁷ The band Kings of Leon released an NFT version of their new album. See Havens L, 'Kings of Leon Will Become First Band to Have an NFT Played in Space' (Billboard, 9 September 2022) <<https://www.billboard.com/music/music-news/kings-of-leon-first-nft-played-in-space-9627031>> accessed 30 August 2022; Street artist Banksy had an original physical piece of artwork burned, transforming the form into an NFT that became more valuable for its uniqueness. See Criddle C, 'Banksy art burned, destroyed and sold as token in money-making stunt' (Futurism, 9 May 2022) <<https://www.bbc.com/news/technology-56335948>> accessed 30 August 2022; The sports industry has been a major contributor to NFTs, with athletes, teams, colleges, and leagues issuing or planning to issue NFTs. See Conrad M, 'Non-Fungible Tokens, Sports, and Intellectual Property Law Issues: A Case Study Applying Copyright, Trademark, and Right of Publicity Law to a Non-Traditional Ownership Vehicle' (2022) 32 J. Legal Asp. Sport 132.

⁸ Liu L, 'NFT art needs a return to sanity' (CCTV, 20 April 2022) <<https://arts.cctv.com/2022/04/20/ARTIXT667w5NDhQjnVAxkONl220420.shtml>> accessed 30 August 2022.

⁹ 'The first global NFT crypto art exhibition 'Impact in Indeed' to open in Shanghai' (China Daily, 28 May 2021) <<https://en.chinadaily.com.cn/a/202105/28/WS60b06703a3101e7ce97522ae.html>> accessed 30 August 2022; 'The world's largest NFT exhibition will open in Beijing at the end of July!' (Sohu, 29 July 2021) <https://www.sohu.com/a/480298695_541698> accessed 30 August 2022.

¹⁰ According to the South China Morning Post, more than 1360 Chinese companies submitted 8534 trademark applications related to the metaverse in December 2021. See Liang X, 'Chinese firms scramble to register metaverse trademarks despite Beijing's warnings of risks' (South China Morning Post, 20 December 2021) <<https://www.scmp.com/tech/big-tech/article/3160411/chinese-firms-scramble-register-metaverse-trademarks-despite-beijings>> accessed 30 August 2022.

¹¹ 'Digital collection platforms have surpassed 500' (Huaxia Times, 16 June 2022) <<https://view.inews.qq.com/a/20220616A0DG1Q00>> accessed 30 August 2022.

providing users with services to access, share, and trade NFT digital collections through their websites or mobile applications.¹²

In recent years, the legal issues surrounding NFTs have been a hot topic in global academia, and a substantial portion of the literature focuses on the copyright issues associated with artwork NFTs. Artwork NFTs have been proven to be the most popular and lucrative form, albeit the ecosystems for metaverse and blockchain gaming are still in their infancy. Undoubtedly, the future of NFTs in mainland China seems gloomy due to the state's harsh stance on crypto-related industries. However, industry practice of major marketplaces, together with judicial experience, pave the way for future regulation of NFTs.

This paper will develop as follows: first, it explores how the technical components impact the basic characteristics of NFTs and addresses the intersection between NFTs and the Chinese Copyright Law, including the legal consequence of minting and selling an NFT and platform liability. The first Chinese judicial response, the *Bigverse* Case, will then be examined and critiqued, with particular emphasis on the legal nature of NFT transactions, determining platform liability, and the applicability of the exhaustion doctrine. Finally, it summarizes current Chinese policy considerations on NFT industries and addresses the conflicts between the decentralized nature of blockchain technology and the centralized nature of the Chinese regulatory frameworks. It also responds to heated debates on digital exhaustion and resale royalty rights under the current Chinese copyright legal framework.

NFTS, ART AND COPYRIGHT LAW

NFTs, lauded as the 'next big thing' in digital era, is a unique and often misunderstood term by both industry and academia.¹³ Admittedly, it is the advancement in blockchain technology and smart contracts that paves the way for the rise of NFTs. Before delving into the relationship between NFTs and artworks and the legal challenges raised by NFTs, it is crucial to comprehend what non-fungible tokens are and how they relate to blockchain technology and smart contracts.

Defining NFTs

Generally, NFTs are designed to represent proof-of-ownership of both tangible and intangible items. In order to provide an overview of NFTs, this chapter primarily focuses on the technical components of NFTs, namely blockchain and smart contracts, and the basic characteristics of NFTs.

Blockchain

The authenticity, immutability, and digital scarcity of an NFT are guaranteed by an underlying immutable and decentralized computer network, namely the blockchain.¹⁴ The complexities of the technological underpinnings of blockchain, in particular, add more intricacies to the understanding of its connection with NFTs. For purposes of readability, the technical details and mechanics of blockchain will be kept to a minimum.¹⁵ In an oversimplified definition, blockchain technology is an open source-based type of distributed ledger that can make data

¹² Alibaba launched its own NFT trading platform based on its own blockchain Antchain, called 'JingTan'; and Tencent launched its NFT trading platform 'HuanHe' APP, based on its own blockchain, 'Zhixin Chain'; NetEase issued

¹³ 'NFT: The Next Big Thing?' (GGU Law Review Blog, 24 February 2022) <<https://ggulawreview.com/2022/02/24/nft-the-next-big-thing/>> accessed 30 August 2022.

¹⁴ Zheng and others, 'An overview of blockchain technology: Architecture, consensus, and future trends' (2017) IEEE 557.

¹⁵ Only the technological features relevant to this research are addressed. For a detailed elaboration of blockchain technology, see Yli-Huumo and others, 'Where is current research on blockchain technology?—a systematic review' (2016) 11 PLoS one 1; See also De Filippi P, *Blockchain and the Law* (Harvard University Press 2018).

recorded immutable by using cryptographic trust and assurance mechanisms.¹⁶ The key features of blockchain technology can be summed up in four aspects: immutability, decentralization, security, and transparency.¹⁷

First of all, blockchain ensures the integrity of committed transactions by employing immutable ledgers. Any changes to the stored data on the blockchain would immediately change the respective hash value, thus invalidating all subsequent data.¹⁸ Once the information has been verified and recorded, it will become tamper-resistant and non-repudiable.¹⁹ Therefore, it is more transparent and secure to share information among parties, since the data cannot be arbitrarily deleted, tampered with, or revised once recorded on blockchain.²⁰ As Trautman and Molesky observed, 'blockchain is simply a data structure that leverages hash functions and encryption to provide the security of information like never seen before'.²¹

In addition, blockchain utilizes a decentralized and distributed ledger to employ the processing capabilities of all participating users in the blockchain network, which optimizes information distribution and avoids the single point of failure situation.²² Instead of requiring external authentication from a central authority, this decentralized peer-to-peer network allows transactions to be conducted between unknown parties.²³ Bitcoin and Ethereum are the best examples of decentralized architectures and systems. The uniqueness and scarcity of an NFT is guaranteed by, eg, Ethereum blockchain technology, as the blockchain protocol prohibits the change of records unless consensus is provided.²⁴ Thus, uniqueness and scarcity, the elements that endow physical art and assets with value, are brought into the digital realm through the application of blockchain technology.²⁵

Smart contract

NFTs are powered by smart contracts, which deal with various actions, including handling the transferability, defining the amount of tokens created and verifying the ownership.²⁶ Technologically, a smart contract is a computer program or a transaction protocol stored on a blockchain, that is intended to automatically execute, control or document legally.²⁷ In a smart contract, once predetermined conditions are met, contract provisions encoded in certain computer programs will be automatically executed.²⁸ Then, 'smart contracts consisting of transactions are essentially stored, replicated and updated in distributed blockchains'.²⁹ As a result, if

¹⁶ Savelyev A, 'Copyright in the blockchain era: Promises and challenges' (2018) 34 *Comput. Law Secur. Rev.* 550, 551.

¹⁷ Other scholars hold that the blockchain technology generally has key characteristics of 'decentralization, persistency, anonymity and auditability'. See Zheng Z and others (n 14) 557.

¹⁸ Nofer M and others, 'Blockchain' (2017) 59 *Bus. Inf. Syst. Eng.* 183, 184.

¹⁹ Zheng Z ad others (n 14) 557.

²⁰ Bhatia S & Wright de Hernandez A D, 'Blockchain Is Already Here. What Does That Mean for Records Management and Archives?' (2019) 16 *J. Archival Organ.* 75, 76.

²¹ Trautman L J & Molesky M J, 'A Primer for Blockchain' (2019) 88 *UMKC L. Rev.* 1, 1-2.

²² Zheng and others (n 14) 557.

²³ Zheng and others, 'Blockchain challenges and opportunities: A survey' (2018) 14 *Int. J. Web Grid Serv.* 352, 357.

²⁴ Savelyev A (n 16) 551.

²⁵ 'NFTs: Redefining Digital Ownership and Scarcity' (Sotheby's, 6 Apr 2021) <<https://www.sothbys.com/en/articles/nfts-redefining-digital-ownership-and-scarcity>> accessed 30 August 2022.

²⁶ Wang and others, 'Non-fungible token (NFT): Overview, evaluation, opportunities and challenges' (2021) arXiv preprint, 4. Available at: <<https://doi.org/10.48550/arXiv.2105.07447>> accessed 30 August 2022.

²⁷ Stark J, 'Making Sense of Blockchain Smart Contracts' (COINDESK, 11 September 2021) <<https://www.coindesk.com/markets/2016/06/04/making-sense-of-blockchain-smart-contracts/>> accessed 30 August 2022.

²⁸ IBM, 'What are smart contracts on blockchain?' <<https://www.ibm.com/topics/smart-contracts>> accessed 30 August 2022; See also Bodó B, Daniel G, & Quintais J P, 'Blockchain and smart contracts: the missing link in copyright licensing?' (2018) 26 *Int. J. Law Inf. Technol.* 311, 316; Fairfield argues that a smart contract is not a contract that emphasizes the making of promises, but an automatically executable programme that focuses on the execution of promises. See Fairfield J A, 'Tokenized: The law of non-fungible tokens and unique digital property' (2022) 97 *Ind. LJ* 1261, 1286.

²⁹ Zheng and others, 'An Overview on Smart Contracts: Challenges, Advances and Platforms' (2020) 105 *Future Gener. Comput. Syst.* 475.

you place the highest bid in an auction, then you automatically get the auctioned NFT, and the seller receives the amount you committed.³⁰

Decentralized parties can carry out fair transactions simply because the entire process is automatically executed without the involvement of an intermediary or central authority. Apart from the employment of blockchain, the key feature that differentiates smart contracts from conventional contracts is the excision of human control.³¹ As Max Raskin points out, '[a]utomation ensures performance, for better or worse, by excising human discretion from contract execution'.³² In practice, most NFT solutions rely on smart contract-based blockchain platforms to ensure their order-sensitive executions.³³

Basic characteristics of NFTs

Powered by smart contracts and protected by blockchain technology, NFTs are blockchain-enabled cryptographic tokens designed to represent proof-of-ownership of both tangible and intangible objects.³⁴ As an application of blockchain technology and smart contracts, NFTs share the same attributes, such as immutability, transparency, and decentralization. Besides, NFTs retain attributes such as security and scarcity that allow them to achieve such high valuations. To better comprehend what NFTs are, how they work, and why they achieve high valuations, it will be helpful to break down the term 'non-fungible token.'

Non-fungible

NFTs are 'a unique digital object with its own traceable history'.³⁵ The 'non-fungible' nature of a token means that it is essentially unique and non-interchangeable. In the real world, non-fungible objects have unique and distinguishable characteristics and properties; baseball card and stamps are good examples in point. It is impossible for one non-fungible token to be traded interchangeably like for like, because each NFT by virtue of a unique identification code and associated metadata that are embedded into the NFT when the NFT is minted on its underlying blockchain.³⁶ The identity and valuation of NFTs may be affected by differences in appearance, scarcity, utility and many other properties.³⁷ Therefore, tokenized assets linked to the NFTs can be considered unique and scarce.

In contrast, cryptocurrencies like bitcoin are fungible tokens that are substitutable for one another and identical in value. For example, one \$20 bill can be exchanged for two \$10 bills, as each bill has a standard value that is equal to all other bills. Practically, trading or exchanging one

³⁰ Giannopoulou A, Quintais J P, Mezei P and others, 'The Rise of Non-Fungible Tokens (NFTs) and the Role of Copyright Law – Part I' (Kluwer Copyright Blog, 14 April 2022) <<http://copyrightblog.kluweriplaw.com/2021/04/14/the-rise-of-non-fungible-tokens-nfts-and-the-role-of-copyright-law-part-i/>> accessed 30 August 2022.

³¹ Clack CD, Bakshi VA & Braine L, 'Smart contract templates: foundations, design landscape and research directions' (2016) arXiv preprint, 2. Available at: <<https://doi.org/10.48550/arXiv.1608.00771>> accessed 30 August 2022. This paper adopted a higher-level definition based on the two topics of automation and enforceability: A smart contract is an automatable and enforceable agreement. Automatable by computer, although some parts may require human input and control.'

³² Raskin M, 'The law and legality of smart contracts' (2016) 1 Geo. L. Tech. Rev. 305, 306.

³³ Wang and others (n 26) 4.

³⁴ Chalmers and others, 'Beyond the bubble: Will NFTs and digital proof of ownership empower creative industry entrepreneurs?' (2022) 17 J. Bus. Ventur. Insights 1, 1-2. See Çağlayan Aksoy P & Özkan Üner Z, 'NFTs and copyright: challenges and opportunities' (2021) 16 JIPLP 1115.

³⁵ Ewe K, 'NFTs, Explained for People Who Still Don't Get It' (VICE, 8 February 2022) <<https://www.vice.com/en/article/qjbwjs/what-are-nft-explainer-meaning-crypto>> accessed 30 August 2022.

³⁶ Caldarola E, 'Conceptualist strategies in pandemic time: the case of Beeple's NFT' in Jovanović, I.V. & Stupnik, V.M., (eds), *Social and Technological Aspects of Art: Challenges of the New Normal* (University of Rijeka 2022) 184. <<https://repository.ffri.uniri.hr/islandora/object/ffri:3063>> accessed 30 August 2022.

³⁷ Chohan R and Paschen J, 'NFT Marketing: What Marketers Need to Know about Non-fungible Tokens (NFTs)' (2021) Business Horizons, 2. <<https://doi.org/10.1016/j.bushor.2021.12.004>> accessed 30 August 2022.

bitcoin for another does not make any difference. Thus, non-fungibility is the key distinction that differentiates NFTs and cryptocurrencies.³⁸ After all, an NFT could be regarded as a certificate of authenticity and ownership history of associated intangible and tangible items recorded on the blockchain.³⁹

Tokens

Absent a universally accepted definition, tokens may denote diverse representations of real and virtual items. Nonetheless, Ferrari suggests that tokens can be described as 'digitally scarce units of value the properties and circulation of which are prescribed via computer code'.⁴⁰ In simple terms, a 'token' is a unique piece of code, which acts as an encryptable representation of the other object.⁴¹

Types of tokens can be varied, including payment tokens that serve as a means of payment like cryptocurrencies, utility tokens that provide digital access to services, asset tokens that represent virtual and physical assets⁴² and security tokens that represent investment products recorded on blockchain.⁴³ The tokenized assets could be various forms of digital contents, like digital artwork, video or music; or physical objects in the real world, such as houses and commodities.⁴⁴ Tokens can be fungible like cryptocurrency, or non-fungible like NFT. Likewise, as for NFTs, the term 'tokens' refers to representations registered on distributed ledgers and appears to indicate the ability of an NFT to represent digital or physical objects on the blockchain. Practically, the most common NFTs that exist on the Ethereum Network are traditionally ERC-721 tokens.⁴⁵ The subject matters traded in tokenized form include both physical objects and digital content, including but not limited to physical paintings, photographs, vinyl records, digital art images, motion pictures, videos, video game character images, virtual avatars, digital music albums and NBA highlights.

In conclusion, NFTs are sets of metadata stored and exchanged on blockchain technology, where an open, distributed digital ledger of transactions could be recorded across the parties 'in a verifiable and permanent way'.⁴⁶ Generally, there are two types of NFTs, on-chain NFTs and off-chain NFTs. In terms of on-chain NFTs, the underlying content and metadata are uploaded to the blockchain. However, the prohibitively expensive cost of uploading the on-chain NFTs, prevents their widespread adoption.⁴⁷ In practice, the most common NFT is a metadata file that contains information that has been encoded with a digital version of the work that is being tokenized. Off-chain NFTs do not store digital content or information on the blockchain. The tokenized content can be stored on centralized servers where developers are able to alter the information. However, decentralized systems are preferred due to their trustworthiness.⁴⁸

³⁸ See Okonkwo IE, 'NFT, copyright and intellectual property commercialization' (2021) 29 *Int. J. Law Inf. Technol.* 296, 297; See also Wilson K B, Karg A, & Ghaderi H, 'Prospecting non-fungible tokens in the digital economy: Stakeholders and ecosystem, risk and opportunity' 65 *Business Horizons* 657, 658.

³⁹ Zweig J, 'NFTs: The Method to the Madness of a \$69 Million Art Sale' (The Wall Street Journal, 19 March 2021) <<https://www.wsj.com/articles/nfts-the-method-to-the-madness-of-a-69-million-art-sale-11616164200>> accessed 30 August 2022.

⁴⁰ Ferrari V, 'The Regulation of Crypto-assets in the EU – Investment and Payment Tokens Under the Radar' (2020) 27 *Maastricht J. Eur. Comp. Law* 325, 326.

⁴¹ Guadamuz A, 'The Treachery of Images: Non-Fungible Tokens and Copyright' (2021) 16 *JIPLP* 1367, 1369.

⁴² See Çağlayan Aksoy P and Özkan Üner Z (n 34) 1117.

⁴³ Lambert T, Liebau D and Roosenboom P, 'Security Token Offerings' (2021) 59 *Small Bus. Econ.* 299, 299–300. The authors explained that assets could be converted to security tokens only if the asset is first securitized and then tokenized.

⁴⁴ Bodó B, Giannopoulou A, Mezei P and others, 'The Rise of NFTs: These Aren't the Droids You're Looking For' (2022) 44 *EIPR* 268; See Çağlayan Aksoy P & Özkan Üner Z (n 34).

⁴⁵ ERC-721 <<http://erc721.org/>> accessed 30 August 2022.

⁴⁶ Iansiti M & Lakhani KR, 'The Truth About Blockchain' (Harvard Business Review, 18 January 2017) <<https://hbr.org/2017/01/the-truth-about-blockchain>> accessed 30 August 2022.

⁴⁷ See Guadamuz (n 41) 1371–72.

⁴⁸ See Çağlayan Aksoy P & Özkan Üner Z (n 34) 1121.

Security and scarcity

Artwork NFTs have been proven to be the most popular and lucrative form, albeit the ecosystems for metaverse and blockchain gaming are still in their infancy. Both academics and the digital art industry keep questioning how artwork NFTs are able to achieve such success in the digital market.⁴⁹ In the view of this paper, NFT zealots invest billions of dollars in the NFTs market, primarily because the security and scarcity of NFTs greatly alleviate the difficulties encountered by artworks in the online environment.

Security.

Before the introduction of NFTs, digital art markets presented limited access and high barriers to entry. Benefiting from the accessibility and efficiency of NFT minting process provided by various platforms, average minters could easily convert a piece of digital artwork into a unique and verifiable asset that can be traded on the blockchain. Thus, the ownership of a certain object is recorded on the blockchain, and each user can effortlessly verify and access related information such as transaction records. Moreover, information concerning copyright ownership might be made more visible and accessible by using an electronic trust service, 'trusted timestamping'.⁵⁰ By creating an immutable ledger for digitized and born-digital items, blockchain theoretically provides tangible assurance of attribution, making them much less susceptible to unauthorized use or copying. As Gibson reveals that 'NFT may be thus both a record of ownership, rendering that relationship itself non-fungible, and at the same notice for trust, as it were, a testimonial of the genuine object'.⁵¹ In doing so, artwork NFTs enable a new type of artwork transaction by 'shifting power from the hands of few into the hands of many'.⁵²

On the one hand, buyers no longer have to worry about the transparency and security of transaction;⁵³ on the other hand, artists, especially digital and underrepresented ones, are guaranteed to distribute directly to audiences, and receive fair renumeration from royalties on subsequent sales, without the involvement of an intermediary.⁵⁴ Commentors claim that NFTs promise to replicate the properties of scarcity, uniqueness and ownership that are associated with the exchange of tangible items, especially artworks.⁵⁵

Scarcity.

NFTs are digitally scarce. NFTs redefine society's perception of 'ownership' by introducing 'scarcity' to the internet by setting limitations and conditions on ownership of digital information, which is generally accessible to the public.⁵⁶ As a consequence, the terms rivalrousness

⁴⁹ Kaczynski S and Kominers SD, 'How NFTs Create Value' (Harvard Business Review, 10 November 2021) <<https://hbr.org/2021/11/how-nfts-create-value>> accessed 30 August 2022.

⁵⁰ See Savelyev A (n 16) 553.

⁵¹ Gibson J, 'The Thousand-and-Second Tale of NFTs, as Foretold by Edgar Allan Poe' (2021) 11 Queen Mary J. Intellect. Prop. 249, 255.

⁵² Carroll R, 'NFTs: The Latest Technology Challenging Copyright Law's Relevance Within a Decentralized System' (2021) 32 Fordham Intell. Prop. Media & Ent. L.J. 979, 983.

⁵³ There are cases indicating that the security of NFTs is not 100% guaranteed. For example, pop star Jay Chou's Bored Ape NFT was stolen by a phishing website on April Fool's Day. See Singh S, 'Jay Chou says his Bored Ape NFT was stolen: This was not an April Fool's joke' (NME, 4 April 2022) <https://www.nme.com/en_asia/news/music/jay-chou-says-his-bored-ape-nft-was-stolen-this-was-not-an-april-fools-joke-3197139> accessed 30 August 2022.

⁵⁴ Some argue that there is currently no evidence that it improves artists' struggles to earn a living (with some notable exceptions) compared to other forms of online monetisation. See Ryan T R, 'Will the Artworld's NFT Wars End in Utopia or Dystopia?' (Art Review, 2 December 2021) <<https://artreview.com/will-the-artworld-nft-wars-end-in-utopia-or-dystopia/>> accessed 30 August 2022; While some artists endorse NFTs as a new means to present their work in its native form on the internet. See McCoy K, 'Art and NFTs: Past and Future' (2022) 45 Colum. J.L. & Arts 353, 355.

⁵⁵ Cashwell J and Furtado L, 'NFTs for estate planners: not just a token concern' (ABA, 27 September 2021) <https://www.americanbar.org/groups/real_property_trust_estate/publications/probate-property-magazine/2021/september-october/nfts-estate-planners-not-just-token-concern/> accessed 30 August 2022.

⁵⁶ See Carroll R (n 52) 981.

and scarcity that are merely used to describe property, also apply to certain intangible items. Fairfield offers an important insight that '[h]umans value uniqueness and scarcity both economically and sentimentally'.⁵⁷

Empirical studies show that scarcity tends to increase the perceived value of almost any acquirable good, particularly when that good conveys desirable attributes such as uniqueness, popularity, status and cost.⁵⁸ Consumers' preferences for scarce commodities are enhanced, especially when their availability is restricted to a limited percentage.⁵⁹ Likewise, acquiring digitally scarce commodities, whether that be original artwork or CryptoKitties, might allow consumers to gain a relative competitive advantage over peers.⁶⁰ Jonathan Zittrain and Will Marks share similar opinions, claiming that an NFT's 'first buyer is getting three things: the warm feeling that may accompany financing an artist; the pride that comes with claiming a relationship to a digital artifact and its creator; and perhaps most tangibly, an asset that can be traded at a later date'.⁶¹ In an NFT transaction, the acquirer actually does not obtain physical possession of the artwork, but rather the certificate of ownership, in the form of an NFT.⁶² For example, the acquirer of a Mona Lisa NFT only obtains a publicly available token that links to a Mona Lisa painting rather than the well-known masterpiece.⁶³ Nonetheless, value in NFTs is reflected not only in digital uniqueness but also in 'a socially engaged audience to admire and value the collector's action'.⁶⁴ NFTs are regarded as a speculative investment that will appreciate in value over time.⁶⁵ Purchasing of artwork NFTs is still desirable, not economically but sentimentally, because consumers could publicly show commitments to their beloved artists, or to maintain the social value of the activity of collecting. As concluded succinctly by Trautman, '[s]howing off is the root of value'.⁶⁶

NFTs and copyright intersections

Theoretically, an NFT can be created to represent anything, including digital and physical items. In practice, since recording data on a blockchain is costly, most NFTs contain as little data as possible, such as a number identifying the NFT, an address identifying the owner of the NFT, and a URL identifying the item linked to the NFT.⁶⁷ The most mainstream application is for digital and physical artwork.⁶⁸ For artists, NFTs are considered to be 'the new artistic, collectible, and investment vehicle' of crypto monetization.⁶⁹ NFTs also redefine our perception of digital ownership, and provide a brand-new paradigm for the production, consumption and collection

⁵⁷ See Fairfield (n 28) 1264.

⁵⁸ See generally Eesha S & Adam LA, 'Financial deprivation prompts consumers to seek scarce goods' (2012) 39 *J. Consum. Res.* 545.

⁵⁹ Ibid 547, 556–57. The paper further concludes, '[o]ne reason for this preference is that consumers tend to associate goods that are limited due to popular demand with greater value in the marketplace.'

⁶⁰ Ibid 556.

⁶¹ Zittrain J and Marks W, 'What Critics Don't Understand About NFTs' (The Atlantic, 7 April 2021) <<https://www.theatlantic.com/ideas/archive/2021/04/nfts-show-value-owning-unownable/618525>> accessed 30 August 2022. Jonathan Zittrain claims that 'NFTs' abstraction, their seemingly arbitrary valuation, and even the paltriness of the privileges they convey to their owners are, for now, big selling points, especially to buyers purchasing directly from artists.

⁶² See Idelberger F and Mezei P, 'Non-fungible Tokens' (2022) 11 *Internet Policy Review* 1, 2; See also Murray MD, 'NFT Ownership and Copyrights: A Brief and Pleasant Guide to NFTs and Copyright Law, Part 1' (2022), 7. Available at: <<https://ssrn.com/abstract=4152468>> or <http://dx.doi.org/10.2139/ssrn.4152468>> accessed 30 August 2022.

⁶³ Thorn A, Marcantonio M & Parker G, 'A Survey of NFT Licenses: Facts & Fictions' (Galaxy, 19 August 2022) <<https://www.galaxy.com/research/insights/a-survey-of-nft-licenses-facts-and-fictions/>> accessed 30 August 2022.

⁶⁴ Trautman LJ, 'Virtual Art and Non-fungible Tokens' (2021) 50 *Hofstra L. Rev.* 361, 391.

⁶⁵ Mendis D, 'Copyright and NFTs: new wine in old bottles?' (World Intellectual Property Review, 24 November 2021) <<https://www.worldipreview.com/article/copyright-and-nfts-new-wine-in-old-bottles>> accessed 30 August 2022.

⁶⁶ Trautman (n 64) 392.

⁶⁷ Brian LF, 'After Copyright: Pwning NFTs in a Clout Economy' (2022) 45 *Colum. J.L. & Arts* 341, 346.

⁶⁸ Kugler L, 'Non-fungible tokens and the future of art' (2021) 64 *Communications of the ACM* 19.

⁶⁹ See Conrad M (n 7) 133.

of artworks. Commentators argue that NFTs promise to revolutionize the way artists and musicians monetize their unique crafts, and assert more control over copyrights.⁷⁰

How NFTs are minted?

Minting refers to the process where 'a user creates a new set of NFT data by sending a transaction to an underlying smart contract that supports NFTs'.⁷¹ Any digital file can be converted into an NFT by installing an implementation of the ERC-721 contract on our own computer or using minting tools.⁷² Luckily, most NFT trading platforms try their best to minimize complexity on their interface for users to mint, collect and trade NFTs. After opening a crypto wallet connected to the NFT marketplace and creating a personal profile, creators can create an NFT by uploading a digital file to the platform. Creators are able to transfer the NFT to collectors through the platform, and the collector can transfer the tokens further to other interested purchasers. Then, all subsequent NFT transactions are recorded on the blockchain, indicating the ownership of the tokens, respectively. Users may be allowed to name, and add descriptions and other metadata to the tokens, depending on the platform that hosts the NFTs.⁷³ In addition, users can set royalty amounts on the NFTs for subsequent transactions on the secondary market.

Generally, there are two common ways to tokenize an artwork as on-chain NFTs and off-chain NFTs, respectively. For on-chain NFTs, digital artwork with a tiny file size will be encrypted and stored directly on blockchain, and then the transaction hash address of the work can be coded into the smart contract of the NFT. For off-chain NFTs, the digital artwork with a larger file size and an image or description of a physical artwork will be stored in an online location, and a link to the digital work, the online image or description of physical work is then coded into the smart contract of the NFT and recorded on the blockchain.⁷⁴

What do buyers receive from NFTs transaction?

In the absence of a unified consensus on the legal status of NFTs, both supporters and skeptics adopt the term 'NFT' to refer not only to the token itself but also to the items to which the token links.⁷⁵ Especially, 'NFTs are expressly sold on the basis of narratives of ownerships'.⁷⁶ Since there is generally no transfer of tangible goods, many consumers are perplexed as to what they actually acquire from an artwork NFT transaction.⁷⁷ Artwork NFT transactions are different from conventional physical artwork transactions. After purchasing a physical artwork, the acquirer obtains ownership of the physical piece. This exclusive property right over the physical artwork excludes others from possessing it. However, it does not work that way with NFTs. In fact, in most cases, an acquirer of an NFT neither automatically obtains ownership nor gains control of the copyright to the work linked to the NFT.

⁷⁰ 'NFTs Are Reshaping Artists' IP Rights' (Bloomberg Law, 24 March 2021) <<https://news.bloomberglaw.com/ip-law/nfts-are-reshaping-artists-ip-rights>> accessed 30 August 2022; Just as New York Times reported that 'NFTs and the related concept of the blockchain hold the promise to, in part, give people ways to make their work more valuable by creating scarcity.' See Shira O, 'NFTs Are Neither Miracles Nor Scams' (N.Y. TIMES, 13 April 2021) <<https://www.nytimes.com/2021/03/26/technology/nfts-hype.html>> accessed 30 August 2022.

⁷¹ See Idelberger F and Mezei P (n 62) 3.

⁷² See Guadamuz (n 41) 1369.

⁷³ DeNicola L, 'What to know about non-fungible tokens (NFTs)—unique digital assets built on blockchain technology' (Insider, 12 July 2022) <<https://www.businessinsider.com/personal-finance/nft-meaning>> accessed 30 August 2022.

⁷⁴ See Murray (n 62) 4.

⁷⁵ Chow AR, 'What Are NFTs and Why They Are Shaking Up the Art World?' (Time, 22 March 2021) <<https://time.com/5947720/nft-art/>> accessed 30 August 2022.

⁷⁶ See Fairfield (n 28) 1285.

⁷⁷ Ibid 1268. Fairfield explained, 'offline, the transaction of selling an object to someone else is so unremarkable that we often do not consider the significant amount of law that goes into determining who can do what with assets that they purchase and own.'

No property right will be transferred?

It should be noted, however, that the files comprising an artwork NFT do not contain the associated artwork, neither the original nor a copy of it,⁷⁸ but rather the data indicating its location and written code that executes commands under pre-set conditions.⁷⁹ In addition, ownership of an NFT does not equate to ownership of the underlying asset. This nuanced distinction matters. Whether the purchaser receives any ownership or right to the underlying items depends on the predetermined conditions coded in the smart contract. Thus, the NFT is essentially the underlying code written to prove the existence and non-fungibility of an associated asset, as well as a record of the transfer of ownership of that asset. This said, artwork NFTs only refer to a certain type of NFT, and NFTs are not artworks. Therefore, no property right of the underlying assets will be transferred.

However, NFT itself could be considered as a property in certain common law jurisdictions. In a recent ruling, the English High Court clarified there is 'at least a realistically arguable case' that NFTs can be treated as legal property under English law.⁸⁰ Similarly, the Singapore's High Court recognized that 'NFTs were protectable digital assets and a form of legal property'.⁸¹ Both decisions indicated that, in practice, the ownership over the token itself will be transferred to the purchaser in an NFT transaction.

No copyright will be transferred or licensed?

As previously discussed, NFT, in its simplest description, is metadata timestamped on the blockchain. The metadata describes how an NFT owner can access and verify the item represented by the NFT.⁸² The smart contract proceeds with the transaction of a token indicating ownership when a buyer purchases an NFT. The purchaser receives merely a verified hash of a token that contains a pointer to a metadata file describing the art work as well as a URL to the artwork itself.⁸³

Technologically, the owner of an NFT obtains the private key that allows him or her access to and control of the smart contract linked to underlying assets.⁸⁴ The artwork might be placed somewhere else.⁸⁵ The purchase of an NFT minted from a physical or digital work does not imply that the copyright to the work has been transferred to the purchaser. Rather, only the rights to NFTs are transferred. The copyright holder retains the exclusive rights to mint and sell more NFTs based on the same work. In most cases, the copyright holder usually maintains scarcity by controlling the number of NFTs.

⁷⁸ Raustiala K and Springman C, 'Guest Column: Tarantino v. Miramax—Behind the NFT 'Pulp Fiction' Case, and Who Holds the Advantage.' (The Hollywood Reporter, 24 November 2021) <<https://www.hollywoodreporter.com/business/digital/tarantino-miramax-pulp-fiction-nft-1235052378/>> accessed 30 August 2022.

⁷⁹ Ferree J, Blair J & Odenkirk S, 'NFTs and the Museum Part 2: Legal Issues for Acquisitions' (LACMA UNFRAMED, 30 August 2021) <<https://unframed.lacma.org/2021/08/30/nfts-and-museum-part-2-legal-issues-acquisitions>> accessed 30 August 2022.

⁸⁰ *Lavinia Deborah Osbourne v Persons Unknown, Ozone* [2022] EWHC 1021 (Comm). Before this case, in *AA v Persons Unknown*, the English High Court held that Bitcoin and other cryptocurrencies can be considered property under English Law subject to an injunction. See *AA v Persons Unknown* [2019] EWHC 3556 (Comm); See also Matthew B and Joseph L, 'Transcending the Challenges of Crypto Assets' (Dorsey, 12 July 2022) <<https://www.dorsey.com/newsresources/publications/client-alerts/2022/07/transcending-the-challenges-of-crypto-assets>> accessed 30 August 2022.

⁸¹ Bridegan T, Brooks S and Pozza D, 'Property Rights in NFTs Are in the Spotlight' (JD SUPRA, 23 August 2022) <<https://www.jdsupra.com/legalnews/property-rights-in-nfts-are-in-the-4248058/#:~:text=Purchasing%20an%20NFT%20grants%20ownership,they%20relinquish%20to%20third%20parties>> accessed 30 August 2022.

⁸² Morse J, 'So You Spent Millions on an NFT. Here's What You Actually Bought' (MASHABLE, 13 March 2021) <<https://mashable.com/article/what-is-an-nft-non-fungible-token>> accessed 30 August 2022.

⁸³ Finzer D, 'The Non-Fungible Token Bible: Everything You Need to Know About NFTs.' (OPENSEA, 10 January 2020) <<https://blog.opensea.io/guides/non-fungible-tokens/>> accessed 30 August 2022.

⁸⁴ See Murray (n 62) 7.

⁸⁵ See Fairfield (n 28) 1283. Fairfield compares the transaction of NFT to transferring a deed to a piece of real estate. 'The deed signifies ownership, but the real estate is still wherever it was before.'

Nonetheless, the situation can be varied by a smart contract that specifies how proprietary rights are transferred upon sale of the NFT, or standard terms of service designed by platforms.⁸⁶ Analysing related business models commonly adopted across different platforms might be helpful for a better understanding of how NFTs transactions work in practice. As shown in the chart below, the pertinent clauses in the Terms and Conditions (T&Cs) of the five largest NFT marketplaces exhibit a nearly identical approach concerning ownership of NFTs.⁸⁷

NFTs platform	Terms and conditions	Contents
JingTan APP (China)	AntChain Digital Collectibles Platform Terms of Service (July 6, 2022 version) ⁸⁸	Article 4.1.6 the copyright in the digital collection is owned by the publisher or the creator of the original work. You may not use the digital collection for any commercial purposes unless otherwise authorized in written agreement by the copyright owner. the digital collection you acquired shall be used only for the purpose of collecting, studying, researching, appreciating and displaying.
HuanHe APP (China)	Software License and Terms of Service (July 1, 2022 version)	Article 7.2 the intellectual property rights in the digital collection are owned by the issuer or other rights holders . No such rights are transferred or shared as a result of your purchase of the digital collection. You may not use the digital collection for any commercial purposes unless otherwise authorized in written agreement by the copyright owner.
NFTCN Website (China)	NFTCN Terms of Service (April 2, 2022 Version) ⁸⁹	Article 1.2 the intellectual property rights of the digital work, digital licensed works and digital derivate works remain with the right holder of the works . The intellectual property rights of such work are not transferred or shared as a result of the transaction.
OpenSea Website (U.S.)	Terms of Service (December 31, 2021 Version) ⁹⁰	Article 3 We and our affiliates, licensors, and users, as applicable, reserve all rights in connection with the Service and its content, including, without limitation, the exclusive right to create derivative works.
Nifty Gateway (U.S.)	Nifty Gateway Terms of Use (September 20, 2021 Version) ⁹¹	Collectors receive a cryptographic token representing the Creator's Digital Assets as a piece of property, but do not own the creative work itself Collectors do not have any legal ownership, right, or title to any copyrights, trademarks, or other intellectual property rights to the Digital Assets, excepting the limited license to the Digital Assets granted by these Terms.

In terms of ownership and copyright, the collector receives a cryptographic token that represents the creator's digital assets as a piece of property, but in the absence of assignment or license, no ownership or intellectual property rights, copyright included, will be transferred to

⁸⁶ Vjayakumaran A, 'NFTs and Copyright Quandary' (2021) 12 JIPITEC 402, 409.

⁸⁷ In China, most platforms avoid the concept of 'token' and adopt 'digital collections' to refer to NFTs. Outside the Chinese market, NFTs can be traded freely on the blockchain with cryptocurrencies and can be exchanged into official currencies through certain channels. In contrast, in China, due to the ban on virtual currency trading, digital collections can only be traded with official currency, the RMB. Apart from this, there is little difference between digital collections and NFTs in general.

⁸⁸ T&Cs of JingTan APP and HunaHe APP are available in the settings of the APPs respectively.

⁸⁹ T&Cs of NFTCN platform <https://www.nftcn.com.cn/pc#/Notice_data_user_f> accessed 30 August 2022.

⁹⁰ T&Cs of OpenSea <<https://opensea.io/tos>> accessed 30 August 2022.

⁹¹ T&Cs of Niftys <<https://niftys.com/terms-of-service>> accessed 30 August 2022.

the collector. There is an exception. Only one NFT projects, World of Women, has explored the possibility of assigning copyright of the underlying work to holders of the NFT.⁹² In general, the collector of an NFT does not obtain rights to copy or produce derivative works.⁹³ Moreover, in most NFT projects, purchasers are licensed to exploit the underlying work in particular ways. For example, purchased NFT can only be used in limited circumstances, ie, for the purpose of studying, researching, appreciating and displaying. Purchasers of an NFT are often allowed to display, sell, use and store it, but are not permitted to commercially profit from their purchase. Compared to physical artwork transactions, artwork NFT purchasers may also obtain bragging rights⁹⁴ and right to resell⁹⁵.

Overall, NFTs do not necessarily confer ownership or copyright of the items associated, unless explicitly stated elsewhere in contracts or external T&Cs. The purchaser usually receives ownership of the token and a license that determines the uses of the associated assets the purchaser can make.⁹⁶ Although collectors usually do not expect control over the works associated with the NFTs, it might be surprising to most NFT purchasers to realize that they spend a large amount of money on merely a set of metadata. However, the reality is that 'the NFT is akin to a deed of ownership and a certificate of authenticity all in one'.⁹⁷ As suggested by Michael D. Murray, when purchasing an NFT from certain platforms, consumers have to carefully read what exactly is being listed for sale. 'If a physical artwork is mentioned, be sure the wording of the listing for the NFT makes it clear that this physical work is part of the sale or is something else being sold such as support or patronage for cultural property'.⁹⁸

Applying Chinese copyright law to NFTs

Although NFTs can be linked to virtually any content or subject matter, they are commonly associated with copyrighted works, such as graphic works, musical works, sound recordings and audio-visual works.⁹⁹ However, NFTs are not protectable subject matter of Chinese Copyright Law simply because they are not the underlying artwork they represent. The token pointing to an artwork has an immutable and unfalsifiable relationship with the artwork, but this does not imply they are identical. Besides, most NFTs do not involve a transfer or share of copyrights.

Yet, the work represented by NFT may be subject to copyright protection. Practically, the token is not capable of proving that the creator or seller is the original creator or lawful owner of the assets because of the anonymity features of the blockchain. For example, OpenSea tweeted that it found that 80% of its NFTs 'were plagiarized works, fake collections, and spam'.¹⁰⁰

⁹² Thorn A, Marcantonio M & Parker G (n 63).

⁹³ Scholars observe that 'some licenses permit the user to copy the NFT in a way that does not involve selling or using it for commercial gain'. See Gatto J and Tomer M, 'NFT License Breakdown: Exploring Different Marketplaces and Associated License Issues' (Entertainment Law Blog, 17 September 2021) <<https://www.entertainmentlawinsights.com/2021/09/nft-license-breakdown/>> accessed 30 August 2022.

⁹⁴ There is a minor difference between bragging rights over physical artwork and artwork NFT. Bragging rights obtained from purchase of physical artwork refers to the increased reputation from ownership of the artwork; in contrast, bragging rights obtained from artwork NFTs denotes increased reputation from being the registered owner of the artwork. See Murray (n 62) 6-7.

⁹⁵ See Ding S, 'Domestic NFT Platform Inventory and Analysis' (Metaverse, 23 May 2022) <<https://www.yuanyuzhouneican.com/article-122722.html>> accessed 30 August 2022. As for Chinese platforms, the right to resell the NFT is strictly limited, as the vast majority (71%) of NFT platforms do not have a secondary market. Only 52% of the platforms allow users to gift NFTs to other collectors.

⁹⁶ Lee E, 'NFTs as Decentralized Intellectual Property' (2022), 3. Available at: <<https://ssrn.com/abstract=4023736> or <http://dx.doi.org/10.2139/ssrn.4023736>> accessed 30 August 2022.

⁹⁷ See Murray (n 62) 7.

⁹⁸ Ibid 5.

⁹⁹ See Lee E (n 96) 4.

¹⁰⁰ Scheck J, 'OpenSea's NFT Free-for-All' (The Wall Street Journal, 12 Feb 2022) <<https://www.wsj.com/articles/opensea-nft-free-for-all-11644642042>> accessed 30 August 2022.

Particularly, in the absence of proper regulations around ownership verification, the minting and dissemination of NFTs are susceptible to copyright infringement.¹⁰¹

Under the current Chinese copyright legal framework, authors, other natural persons and other organizations are entitled to four categories of moral rights, including the right of publication, the right of authorship, the right of revision and the right of integrity of the work;¹⁰² and thirteen types of economic rights, covering the right of reproduction, distribution, rental, exhibition, performance, broadcasting, communication through information network, filming, adaptation, translation, compilation and other rights.¹⁰³ But not all of those rights are applicable to NFTs, thus only those that do will be mentioned and discussed in the following analysis. In addition, the legal issues of copyfraud, exhaustion doctrine and liability of NFT trading platforms will also be addressed.

Moral rights of the author

Generally, an NFT itself has very limited connection with moral rights. In certain circumstances, the minting and selling of an NFT may violate moral rights of the author. First, the right of publication allows authors to decide whether to make a work available to the public. An author's right of publication may be violated when the user makes an unpublished work available to the public with authorization by uploading it to the platform to mint an NFT. Second, the right of authorship refers to the right to claim authorship in respect of, and have the author's name mentioned in connection with, a work. An NFT stands for the metadata that contains certain information about the tokenized work, including the unique combination of tokenID and contract address, and the name of the work, the name of the author, the copyright status of the work, etc.¹⁰⁴ Thus, the author shall have the right to claim to be publicly identified as the creator of his works in the metadata of NFT. Third, Article 10(3) provides the right to revise or authorize others to revise a work. The wording of this provision seems problematic, as it overlaps with the right of adaptation and the right of integrity and often leads to confusion. The author is free to revise the work before it is published, and the author is able to revise the published work and make the revised work available to the public after the revisions. It seems that there is little interaction between the right of revision and NFTs. Finally, the right of integrity refers to the right to protect a work against distortion and mutilation. In practice, an infringement of the right of integrity would be any action related to the work that changes the opinions or feelings that the author intended to express in the work in a way that harms the author's honour or reputation.¹⁰⁵ If a user substantially alters the contents of a digital work in a way that harms the author's honour or reputation when uploading it to the platform to mint an NFT, the author's right of integrity might be violated.

Economic right in the work

In terms of economic rights, not all of those rights apply to NFTs. Only rights of reproduction, distribution and communication through information network might be involved in the minting and selling of NFTs.

Under Chinese Copyright Law, the right of reproduction refers to the right to reproduce one or more copies of a work by printing, photocopying, lithographing, making a sound recording

¹⁰¹ See Okonkwo (n 38) 299; However, Guadamuz holds that it is difficult to see how minting and dissemination of NFTs could be considered copyright infringement. See Guadamuz (n 41) 1378; Garcia expresses similar opinion with Guadamuz. See also Garcia K, 'The Emperor's New Copyright' (2023 Forthcoming) Boston University Law Review, 33-34. Available at: <<https://ssrn.com/abstract=4048315> or <http://dx.doi.org/10.2139/ssrn.4048315>> accessed 30 August 2022.

¹⁰² Article 10(1)-(4) of Chinese Copyright Law (2020 Amendment).

¹⁰³ Article 10(5)-(17) of Chinese Copyright Law (2020 Amendment).

¹⁰⁴ See Guadamuz (n 41) 1370.

¹⁰⁵ Wang Qian, *Copyright Law*, Renmin University Press, 2015, p.156.

or video recording, duplicating a recording, or duplicating a photographic work, or digitalization or by other means. An NFT itself could not be considered a reproduction of the work, as most NFTs are a set of metadata that contains no substantial copying of the work. Besides, it is worth noting that no copy is produced in the minting process. Although an NFT is not a copy of the underlying work, uploading a work to a platform to mint an NFT inevitably involves a reproduction of it. copyright infringement may occur when an unauthorized person uploads a work to mint an NFT.

There is a heated debate on question of whether unauthorized minting and selling of an NFT might constitute an act of distribution or communication through information network. On the one hand, under Chinese Copyright Law, the right of distribution grants copyright owners the right to provide the original copy or reproductions of a work to the public by selling or donating. This said, the right of distribution applies to acts of providing the original or a copy of the work to the public by transferring ownership of the tangible carrier of the work or copy.¹⁰⁶ Given that the right of distribution is primarily concerned with the transfer of ownership of tangible copies of works, it is conceivable that the transfer of NFTs does not fit within the right of distribution.¹⁰⁷ Similarly, exhaustion doctrine does not apply to the sale of NFTs, either.

On the other hand, the right of communication through information network refers to the right to make a work available to the public by wire or by wireless means, so that people may have access to the work at their chosen time and place. In comparison, the right of distribution emphasizes on provision of 'original copy or reproduction of a work' to the public and requires transferring ownership of tangible carrier of original or copy of the work. While the right of communication through information network emphasizes on 'provision of a work' to the public and does not involve transferring ownership of tangible carriers. On most platforms, the underlying work is associated with the NFT via a URL. Providing an access to underlying work can be considered an act of communication through information network under Chinese Copyright Law.

Works in public domain

Chinese Copyright Law imposes no time limit on the term of protection for an author's rights of authorship and revision and his right to protect the integrity of his work.¹⁰⁸ The term of protection for the right of publication and economic rights of the author shall be the lifetime of the author and 50 years after his death.¹⁰⁹ Users may create NFTs of works that are in the public domain consequent to the expiry of their term of protection. Notably, the Xu Beihong Museum of Art clarified that certain digital platforms sell related NFT digital collections minted from original works of Xu Beihong without authorization. All his original paintings are in the public domain now, since the term of protection for economic rights in China is 50 years following the death of the author, and he died in 1953. The platforms even listed some NFT digital collections in the name of Xu Beihong, which actually have no relationship with that artist.¹¹⁰ In this scenario, permission of the copyright owner is not required, regardless of the fact that depriving the public domain seems to be hardly ethical. Minting NFTs from public domain works does not infringe upon the author's economic right in the work, but his right of authorship.

¹⁰⁶ Ibid 177.

¹⁰⁷ Bodó B et al (n 44) 277-278.

¹⁰⁸ Article 22 of *Chinese Copyright Law* (2020 Amendment).

¹⁰⁹ Article 23 of *Chinese Copyright Law* (2020 Amendment).

¹¹⁰ Adcock R, Mellor S & Fitzpatrick S, 'Boodle Hatfield's June NFT Litigation Roundup: Jay-Z and Roc-A-Fella settle dispute with Damon Dash, Bored Ape creators sue Ryder Ripps, and more...' (Lexology, 6 July 2022) <<https://www.lexology.com/library/detail.aspx?g=c298edf9-89dd-4ebe-b73c-e3add6aabeff>> accessed 30 August 2022.

Platform liability

Most NFT trading platforms provide various services to help users to mint, collect, host and trade NFTs, while others mint and issue their own NFTs. Generally, NFT trading platforms can hardly be considered ICPs that provide automatic access or automatic storage of works from other network service providers,¹¹¹ but ISPs that provide storage space to make work available to the public or searching and linking services¹¹². While ISPs can enjoy the protection of the safe harbour only if they comply with notice and take-down obligation,¹¹³ take necessary measures in a timely manner,¹¹⁴ receive no direct financial benefits from infringements,¹¹⁵ do not interfere with the works¹¹⁶. Moreover, in assessing liability of an ISP, its capability to manage and control will also be taken into consideration.¹¹⁷ Certainly, the above liability assessments should be carried out on a case-by-case basis. Besides, under the Chinese E-commerce Law, e-commerce platforms are required to establish their IPRs protection rules to strengthen collaboration with IPR holders.¹¹⁸ More importantly, platform operators will be liable and fined if they fail to implement and enforce necessary IPRs protection measures.¹¹⁹ Thus, NFT trading platforms that operate might be held liable for their users' infringing uploads if they fail to perform their duty of care.

As most NFT trading platforms are reluctant to the verification of the authorship or ownership of NFTs minted or uploaded on their platform, they are more open to liability of copyright infringement. In practice, some platforms make a disclaimer in the T&Cs to avoid liability, explicitly limiting its liability for copyright infringement that may exist during the minting and selling process of NFT. However, any T&Cs that violate a statutory law would be voidable, and 'negligence cannot be completely eroded by contract or disclaimers'.¹²⁰

However, platforms could take proper measures to verify the authenticity of the work to reduce the risk of copyright infringement. Furthermore, platforms could implement notice and take-down and counter notification policies and procedures. That means, copyright owners could send formal take-down notices claiming their rights have been infringed as soon as they discover their original works are sold as NFTs without permission. Upon a formal notice of infringement, the platform then should expeditiously remove or disable access to the NFT or NFT-related contents and the seller send counter notice claiming that the NFT or NFT-related contents were wrongfully removed.

LEGAL CHALLENGES AND JUDICIAL RESPONSE: THE BIGVERSE CASE

The Bigverse case is known as the first NFT-related case in China. In the absence of clear provisions on 'digital collection' and 'NFT' in the current legal provisions, this first NFT judgment is

¹¹¹ Article 20-21 of *Regulations for the Protection of the Right of Communication through the Information Network* (2013 Amendment).

¹¹² Ibid Article 22-23,

¹¹³ Ibid Article 14-17, Article 22(1) and (5). In addition, Article 42 of *E-Commerce Law* also impose a notice and take-down obligation to E-commerce platform operators.

¹¹⁴ Article 1197 of *Civil Code* (2020). An ISP is jointly and severally liable with a user if the ISP knows, or should have known, that the user is infringing on the civil rights or interest of another person through the ISP's services and the ISP fails to take necessary measures, such as deleting, blocking or disconnecting the infringing content.

¹¹⁵ See (n 111) Article 22(4).

¹¹⁶ Ibid Article 22(2).

¹¹⁷ Article 9 of *Provisions on Relevant Issues Related to the Trial of Civil Cases involving Disputes over Infringement of the Right of Dissemination through Information Networks* (2018).

¹¹⁸ Article 41 of *E-Commerce Law* (2018).

¹¹⁹ Ibid Article 84.

¹²⁰ See Okonkwo (n 38) 301.

ground-breaking because it not only discusses a broad range of NFT-related issues but also sets a course for the subsequent judicial and business practice of IP-related NFTs in China.

The disputed 'Fat Tiger Vaccination' image is one of cartoon series, 'I am not a fat tiger', created by Ma Qianli. The plaintiff, QiCe Company, obtained authorization from Ma to exercise the exclusive rights of the 'I am not a fat tiger' series. The plaintiff found that a user used the 'Fat Tiger Vaccination' image without permission to mint and release an NFT on NFTCN, the NFT trading platform of the defendant Bigverse. The plaintiff asserts such an act infringed its right of communication through information networks. Then the plaintiff filed a lawsuit to the Hangzhou Internet Court, alleging that the defendant should be liable for its user's infringing act and requesting that the defendant cease the infringement and compensate damages for RMB100,000.¹²¹

In this judgment, the Hangzhou Internet Court explored major challenges to the regulation of NFT transactions with regard to, *inter alia*, originality of the disputed work, the nature of NFT transactions and NFT platforms, the applicability of exhaustion doctrines, as well as the applicability of a higher duty of care to NFT platforms. The following analysis primarily examines the opinions of the judgment with a critical lens.

Originality of the disputed work

Pursuant to Article 3 of *Copyright Law of the People's Republic of China* (hereafter *Chinese Copyright Law*), the term 'works' means 'intellectual creations with originality in the literary, artistic, or scientific domain, insofar as they can be presented in a certain form'. Additionally, Article 3 also provides an illustrative lists of nine categories of protected subject matter.¹²² Obviously, such a definition is quite similar to 'work' described in the U.S. *Copyright Act*, which refers to original, creative, expression fixed in a tangible form.¹²³ To be qualified for copyright protection in China, a work has to meet the following prerequisites: (1) it is original; (2) it is an intellectual creation; (3) it must be in the field of literary, artistic, or scientific; and (4) it can be presented in a certain form.

When it comes to NFT, obviously it is not one of the nine types of works defined in *Chinese Copyright Law*. Thus, NFTs are not copyrightable unless they are intellectual creations with originality in literary, artistic, or scientific domain that can be presented in a certain form. The 'creation' of NFTs through the minting process is entirely different from the intellectual creation in a copyright sense, as no personality of the creator is expressed in the former process.¹²⁴ Further, most likely, a certain degree of creativity and originality cannot be found in NFTs, since they are merely cryptographic tokens that represent proof-of-ownership of tangible and intangible items. Moreover, in most cases, the metadata contains various bits of information concerning the artwork on blockchain that might not be original enough to qualify as an online literary work.¹²⁵

In this case, the disputed work 'I am not a fat tiger' was found by the court to be a work of fine art protected by Article 3 of *Chinese copyright law*. The court summarized that, compared to general works, works of fine art should have a certain aesthetic significance. As long as the

¹²¹ Xiao B, 'Chinese court rules on NFT transactions and responsibility of trading platforms' (2022) 17 JIPLP 604.

¹²² The nine types of work include: (1) written works; (2) oral works; (3) musical, dramatic, quyi, choreographic and acrobatic works; (4) works of fine art and architecture; (5) photographic works; (6) audio-visual works; (7) graphic works such as drawings of engineering designs and product designs, maps and sketches, and model works; (8) computer software; and (9) other intellectual creations that satisfy the characteristics of works.

¹²³ 17 U.S.C. § 102 (a).

¹²⁴ Although the concept of originality remains undefined in Chinese legislation, a certain degree of intellectual creation and the expression of personality of the author are the primary criteria adopted by Chinese Courts. See Wan Y and Lu H, 'Copyright protection for AI-generated outputs: The experience from China' (2021) Comput. Law Secur. Rev. 1; He T, 'The sentimental fools and the fictitious authors: rethinking the copyright issues of AI-generated contents in China' (2019) 27 Asia Pacific L. Rev 218.

¹²⁵ See Okonkwo (n 38) 297. The author holds that the alphanumeric code underlying the token itself may be afforded a thin layer of copyright.

creator expresses his or her unique view of aesthetics in a visible way on a tangible carrier with a minimum degree of creativity, it can constitute a work of fine art subject to copyright protection.

The disputed work was an original hand-drawn cartoon created by a well-known cartoonist on a tangible carrier, which presents the author's unique individual expression and reflects the author's personality. Thus, the disputed work is a work of fine art protected by *Chinese Copyright Law*.

Legal nature of NFTs

The Hangzhou Internet Court attempts to link the concept 'digital work' with NFT, and adopts an ambiguous term 'NFT digital work' to refer to digital works in the literature and art domain traded in the form of NFTs. This problematic term indicates that an 'NFT digital work' is a digital work in the form of NFT. What is even worse, judges mistakenly treated the 'NFT digital work' as the content of an NFT transaction. But in this case, only the NFT of 'Fat Tiger Vaccination' was traded, the tokenized work was still under the control of the author, Ma Qianli.

However, the court avoids the most challenging task of clarifying the legal status of NFTs in the ruling, but simply concludes that an NFT is a set of non-interchangeable data that records the characteristics and information of digital works. 'An NFT does not contain the digital work, but the metadata pointing to the digital work. As a certificate that verifies the authenticity of the digital files it represents, an NFT itself cannot be directly appreciated by users.'

The court further contended:

'Under the NFT trading model, each copy of a digital work is represented by a unique unit of metadata, resulting in the 'uniqueness' and 'scarcity' of an NFT. Consequently, when a copy of a digital work is displayed in the form of an NFT on a trading platform, that copy is specified as a particular 'digital good,' generating a property right over the tokenized digital work.'¹²⁶

As it can be seen, the court did not clearly distinguish between digital goods and digital property and even interchanged the two terms to a certain extent. The court misunderstood the technical features of NFTs and concluded the transfer of ownership of the tokenized copy. Indeed, it is the token that represents the digital work on the blockchain has been transferred to the buyer.¹²⁷ The NFT digital work is not equivalent to the digital work, but a token specified as a digital good in the online market.

Furthermore, Article 127 of the *Civil Code* explicitly stipulates that '[w]here any laws provide for the protection of data and virtual property, such laws shall apply'. The *Civil Code* recognizes the legal status of virtual property, but does not provide a specific definition of virtual property. Moreover, there are no relevant stipulations that regulate virtual property in other laws and administrative regulations so far. Legally speaking, this indicates that it is still uncertain whether digital goods can be protected as virtual property. But the court took a lead to identify digital goods as virtual property, interpreting that the rights and interests over an NFT digital works are equivalent to property ownership. Interestingly, both the English High Court and Singapore's High Court confirmed that NFTs are capable of being treated as property and thus subject to proprietary injunction.¹²⁸

¹²⁶ *Shenzhen QiCeDieChu Cultural and Creativity Co. v Hangzhou Bigverse Technology Co.* (2022) *Hangzhou Internet Court Civil First Judgment No. 1008*, 18.

¹²⁷ See Guadamuz (n 41); Carroll R (n 52).

¹²⁸ *Lavinia Deborah Osbourne v Persons Unknown, Ozone* (n 80); Matthew B & Joseph L (n 81).

Legal nature of NFT minting and NFT transaction under Chinese law

The court explicitly held that right of reproduction is violated in the NFT minting process. When a user uploads a work to mint an NFT, the digital work stored on the user's device will be copied to the server. The process of uploading a work to mint an NFT inevitably involves making copies of the original works.¹²⁹ As a result, the court should make it clear that minting an NFT does not involve copyright infringement, as it is not equivalent to uploading. Technically, there is no copy produced in the minting process as the NFT itself is not a reproduction of the work, but a tokenized version of it. If a minter owns the copyright to the digital or physical works, he or she could freely create NFTs of them. However, if the minter of the NFT does not own the copyright to the work, or obtain permission from the copyright owner, the uploading of a work to mint an NFT may amount to copyright infringement.

Regarding the nature of NFT transactions, the court followed the previous problematic conclusion that trading an NFT is essentially a sale that enables the transfer of ownership of a particular digital good. It further explained that:

‘A digital good is a simulation of real things with a proprietary nature that exists in the form of codes in the virtual world. For a digital work, a property interest arises when a copy of it is stored in cyberspace and becomes a unique digital good that is circulated online through an NFT that points to it.¹³⁰ After purchasing the tokenized digital work, the acquirer obtains a digital property right, rather than either a license to exploit a digital property or a transfer or license of an intellectual property right.¹³¹

And the court asserted that the ownership of the tokenized digital work was transferred in the sale of the disputed NFT, and the owner has exclusive rights to possess, utilize, benefit from and control the tokenized digital work.

As discussed above, only the ownership of the token that represents the digital work has been transferred to the purchaser in an NFT transaction. The right holder retains the ownership and copyright of the tokenized digital work, unless explicitly stated elsewhere in contracts or external T&Cs. It is interesting to note that the court did not address the role of smart contracts in the transaction of NFTs in this case, due to its lack of knowledge of the content of the smart contracts applicable to the disputed NFTs. In fact, by coding predetermined transaction conditions into the smart contract, the creator is able to transfer the copyright of the work together with the NFT to the purchaser.¹³²

Distribution or communication through information networks?

Before deciding on the liability of the defendant, the court found that the transaction of NFTs without permission constituted an act of communication through information networks rather than the right of distribution, whereas distribution under current *Chinese Copyright Law* is limited to the transfer of ownership of tangible copies of works.¹³³

In this case, the court held that the core feature of the right of distribution is the transfer of ownership of the original or copies of the work on a tangible carrier. However, there is generally no transfer of tangible goods in NFT transactions. Therefore, ‘the sale of NFTs on third-party

¹²⁹ *Bigverse* (n 126) 18.

¹³⁰ *Ibid.*

¹³¹ *Ibid* 18-19.

¹³² See *Guadamuz* (n 41) 1373-1374.

¹³³ *Bigverse* (n 126) 20.

trading platforms without the permission of the rights holder does not yet fall within the scope of control of the right of distribution.¹³⁴

The transaction of NFTs primarily involves the acts of uploading and offering for sale. The former is manifested by copying the digital work stored on the minter's device to the web server, and the latter is demonstrated by displaying an NFT on the platform for the purpose of sale, thus allowing the public to access the digital work at a time and from a place individually chosen by them.¹³⁵ Therefore, Bigverse infringed upon the right of communication through information networks by making the copies of disputed digital works available to the public in a copy-right sense.

What the court overlooked in the above analysis is the distinction between on-chain and off-chain NFTs. For on-chain tokens, the underlying content and metadata are uploaded to the blockchain. It is fair to conclude that the sale of an on-chain NFT constitutes an act of communication through information networks.¹³⁶ In this case, the disputed tokenized work was stored on the blockchain,¹³⁷ thus making it available to the public through information network. For off-chain NFTs, the underlying content or information is not stored on the blockchain. An off-chain NFT contains metadata of the tokenized work and a smart contract that includes a link, mostly a public URL, to the server that stores the tokenized work.¹³⁸ It would be difficult to draw a conclusion with the sale of an off-chain NFT. In off-chain NFT transactions, the tokenized work is linked to a URL address, and only a limited number of people can access the linked tokenized work. In addition, if the NFT metadata does not contain a link to the tokenized work, then the mere posting of metadata does not qualify as a communication to the public.¹³⁹ That is to say, the tokenized work might not be made available to the public in off-chain NFT transactions.

Applicability of exhaustion doctrine to NFT transaction

Pursuant to *Chinese Copyright Law* and pertinent judicial interpretations, the court explained that exhaustion doctrine is based on the indivisibility of works and their tangible carriers, making it inapplicable to NFT transactions.

Article 10(6) of the *Chinese Copyright Law* borrows the WCT's definition of distribution, and provides a right of distribution that allows the copyright holder to control the first distribution of a particular authorized copy. It defines right of distribution as 'the right of distribution refers to the right to provide the original copy or reproduction of a work to the public by selling or donating.' Article 10(6) merely lists two ways to transfer the ownership of a particular authorized copy to the public: by selling and donating.

Although *Chinese Copyright Law* neither offers a definition of exhaustion doctrine, nor regulates the resale of digital works, courts have meticulously explained exhaustion doctrine in various cases. A review of cases would better explain how the exhaustion doctrine applied in practice. Theoretically, the right of distribution is limited by 'exhaustion doctrine', which exhausts the copyright holder's right to control further resales of a given copy after the first sale or distribution;¹⁴⁰

¹³⁴ Ibid 20.

¹³⁵ Ibid 19-20.

¹³⁶ See Çağlayan Aksoy P and Özkan Üner Z (n 34)1122.

¹³⁷ Bigverse (n 126) 8.

¹³⁸ See Çağlayan Aksoy P and Özkan Üner Z (n 34)1121.

¹³⁹ Bodó B et al (n 44) 279.

¹⁴⁰ See (2017) *Guangzhou IP Court Civil Final Judgment No.162*. In this case, the plaintiff claimed that the defendant's failure to recall the products at issue within six months after the termination of the contract constituted infringement. However, the court referred to the exhaustion doctrine, and claimed that after the copyright owner or authorized licensee sold the original or copy of the work, the subsequent distribution of the original or copy would no longer be under the control of the copyright owner's right of distribution.

exhaustion doctrine applies to lawfully made work or a copy of work on a tangible carrier;¹⁴¹ lawful originals or copies must have been put into circulation;¹⁴² exhaustion doctrine does not apply to right of communication through information networks or the right of reproduction.¹⁴³ Evidently, the court denied the 'digital' exhaustion doctrine, and followed the opinion that the exhaustion doctrine was historically designed to cover the transfer of ownership of tangible works,¹⁴⁴ then elaborated on the inapplicability of the exhaustion doctrine to transactions of NFTs:

The exhaustion doctrine is based on the indivisibility of a work and its tangible carrier. The transaction of NFT does not result in the transfer of ownership or possession of the tangible carrier of the work, and is not subject to the right of distribution, leading to the inapplicability of the exhaustion doctrine. Rather, the sale of NFT constitutes an act of communication through information networks, as the NFT digital works are available to an undetermined public at a chosen time and place.¹⁴⁵

On this basis, the court held that the exhaustion doctrine cannot be applied to the sale of NFTs, given that copies of digital works could be made available to the public without the transfer of the work's tangible carrier. The court rigorously follows the theory developed in prior cases, deciding the distribution right only applies to a work on a tangible carrier, rather than a dematerialized digital file linked to an NFT. The court introduced the 'balance of interest doctrine', and maintained:

'If NFT digital works can be reproduced in unlimited quantities without additional cost, even for the entity that legally acquires copies of NFT digital works, the number of files potentially available for subsequent distribution is difficult to control. This would contradict the legislative purpose of the right of distribution, and the interests of the copyright owner would be seriously harmed.'¹⁴⁶

The above statement is better considered as a defense for digital works, rather than NFTs, as the latter cannot be replicated 'in unlimited quantities without additional cost'.

Liability of marketplace platforms under Chinese Law

To determine the liability of NFT platforms for copyright infringement, a comprehensive assessment of copyright law and business models would be necessary. Considering that most platforms provide services for users to mint and sell NFTs, they are more open to copyright liability since their listing pages usually contain a direct link to works.¹⁴⁷ An NFT platform that enables users to display, publish, distribute, rent or sell infringing copies becomes liable for copyright infringement, unless intermediary immunity applies.¹⁴⁸ Generally, NFT trading platforms rely on automated notice-and-takedown mechanisms to avoid potential liability.

¹⁴¹ See (2018) *Henan Higher People's Court Civil Final Judgment No.1803*. The defendant claimed that the sale of second-hand books did not constitute copyright infringement according to the exhaustion doctrine. The court held that the prerequisite for the application of exhaustion doctrine is that the original or copy of the work must be obtained with the authorization of the copyright owner. In this case, the administrative authorities had already decided that the second-hand books at issue were infringing, so the exhaustion doctrine could not be applied.

¹⁴² See (2012) *Shanghai First Intermediate Court IP Tribunal Civil Final Judgment No.312*. The court held that a prerequisite for the application of the exhaustion doctrine is that the IPR product has entered into circulation.

¹⁴³ See (2019) *Beijing IP Court Civil Judgment No.3786*. In the appeal, the court of second instance considered the current state of Chinese copyright legislation, and held that there are still obstacles to introducing exhaustion doctrine to online dissemination. Even if there is a need to introduce exhaustion doctrine into online environment, it should at least meet the two requirements: (1) transfer of ownership of the original or copy; (2) deletion of the file stored by the transferor after transmitting the digitized work to others.

¹⁴⁴ Mezei P, *Copyright exhaustion* (2nd edn, CUP 2022) 150. See also Reis S, 'Toward a 'Digital Transfer Doctrine'? The First Sale Doctrine in the Digital Era' (2015) 109 *Nw. U. L. Rev.* 173, 182-184.

¹⁴⁵ *Bigverse* (n 126) 20.

¹⁴⁶ *Ibid.*

¹⁴⁷ See Guadamuz (n 41) 1382.

¹⁴⁸ See Okonkwo (n 38) 301.

In this case, based on a comprehensive evaluation of the NFT trading platform's pattern of trade, technical features, capability to control and manage and profit model, the court concluded that the platform at issue should be regarded as an Internet Service Provider rather than an Internet Content Provider.¹⁴⁹

Capability to control and manage

Since NFT trading platforms are considered to be ISPs, according to Article 1195 of the *Civil Code* and Article 15 of the *Regulation on the Protection of the Right of Communication through Information Network*, they should comply with their obligation to take necessary and effective measures to identify and remove infringing contents upon notice, including to remove the infringing contents from the server permanently to cease infringement.

The court found that the platform controls the whole process of minting and selling, and all the relevant transaction information is recorded on NFT trading platforms.¹⁵⁰ Particularly, in practice, each digital work has to be reviewed after uploading to the platform. Therefore, the court concluded that Bigverse has the capability to control and manage NFTs on its platform, and is provided with the appropriate capacity and conditions to monitor without incurring additional costs.¹⁵¹

Directly obtains any economic benefits

In judicial practice, when determining the liability of an ISP, the court has to consider whether the ISP obtains direct financial gain from the provision of the work at issue. In this case, the platform not only collects a gas fee when minting an NFT but also charges a certain percentage of commission and gas fee from each subsequent transaction. According to the first paragraph of Article 11 of *Provisions by the Supreme People's Court on Several Issues Concerning the Application of Law in Hearing Civil Dispute Cases Involving Infringement of the Right of Communication through Information Networks* (hereafter as *Provisions*), 'where an ISP directly obtains any economic benefits from a work, performance, or sound or audio-visual recording provided by a user, the court shall determine that the ISP has a higher duty of care for the network user's infringement of the right of communication through information networks.'¹⁵² Thus, the NFT trading platform should bear a higher duty of care since it received economic benefits directly from transaction of NFTs.

However, the second paragraph of Article 11 of *Provisions* further adds that, 'if an ISP obtains any benefits from inserting advertisements into a specific work.... or obtains any economic benefits otherwise related to the communicated work.... it shall be determined that the ISP directly obtains economic benefits as mentioned in the preceding paragraph, excluding the general advertising and service charges, among others, collected by an ISP for providing network services.'¹⁵³

To a certain extent, gas fee refers to the minting service fee for converting digital works into NFTs through blockchain technology. It serves as a payment to blockchain miners for the computing power required to validate transactions on the blockchain.¹⁵⁴ The amount of the gas fee is usually a fixed price unrelated to the content of the work or transaction prices. Therefore, it

¹⁴⁹ Bigverse (n 126) 21.

¹⁵⁰ Ibid 22–23.

¹⁵¹ Ibid 23.

¹⁵² Article 11 of *Provisions by the Supreme People's Court on Several Issues Concerning the Application of Law in Hearing Civil Dispute Cases Involving Infringement of the Right of Communication through Information Networks*, 1st para.

¹⁵³ Ibid, 2nd para. Emphasis added.

¹⁵⁴ 'Non-Fungible Tokens (NFTs)' (Congressional Research Service, 20 July 2022), 9. Available at: <<https://crsreports.congress.gov/product/pdf/R/R47189>> accessed 30 August 2022.

is unreasonable to regard the gas fee as a direct economic benefit. However, if the percentage of gas fee charged is unreasonable, it shall no longer be considered technical service fees but a direct financial benefit.¹⁵⁵

Necessary measurement

Then the question that should be addressed here is what measures does the NFT platform put in place to escape liability? The court held that NFT trading platforms should take proper measurements to prevent potential infringement and verify the legitimacy and authenticity of the NFTs uploaded.

Moreover, platforms should identify whether users have the right or are licensed to mint an NFT. This said, a platform like Bigverse should introduce ex-ante review mechanisms to conduct a preliminary review of the authenticity of NFTs traded on its platform, including to determine whether the users minting NFTs have provided *prima facie* evidence that they are the actual rights owners.¹⁵⁶ Nonetheless, the court claimed that an ISP is granted a certain degree of autonomy to decide how to implement preliminary review within the framework of legal provisions, depending on practical considerations such as their own needs to review, the type of intellectual property rights, and industry best practice.¹⁵⁷

Besides, Bigverse should also develop an appropriate infringement prevention mechanism to conduct effective monitoring to prevent and curb infringement at the source. If necessary, Bigverse should require users who mint NFTs to provide guarantees or warranties to the greatest extent possible that the NFTs are not infringing.¹⁵⁸ As Bigverse failed to fulfil the duty of care by not conducting any preliminary review and not taking necessary measures to effectively cease the infringement after knowing about its user's own infringement, it should bear the corresponding responsibility of contributory infringement.¹⁵⁹

The ex-ante monitoring obligation appears to be similar to the new obligation for online content sharing service platforms introduced in Article 17 of the *Directive on Copyright in the Digital Single Market*.¹⁶⁰ NFT trading platforms are required to act as gatekeepers, who are obliged to take down infringing materials and make their best efforts to prevent potential infringement.

THE WAY AHEAD: NFT AND COPYRIGHT LAW AFTER BIGVERSE

The first NFT-related copyright case attracted considerable attention. Some legal practitioners and academics posted comments in favour of this decision as it provides guidance for judicial and business practice. Others post fierce criticisms on the problematic terms adopted such as 'NFT digital work' and 'digital good', as they lead to more incorrect understandings of NFTs and the sale of NFTs. Although this decision responds to some heated debates and offers detailed reasoning, there are other issues remaining unaddressed or unsolved. Further, the decision might also lead to a copyright dilemma.

¹⁵⁵ See (2021) *Beijing IP Court Civil Final Judgment* No.3882. The defendant directly collected 40% of the margin from the works uploaded by users as technical service fee. The court of first instance held that fee charged in nature was different from the general service fee charged in general and the proportion is far from reasonable. Thus, the court considered it as direct financial benefit from works at issue.

¹⁵⁶ *Bigverse* (n 126) 22–23.

¹⁵⁷ *Ibid* 23.

¹⁵⁸ *Ibid* 24.

¹⁵⁹ *Ibid* 25.

¹⁶⁰ See Directive (EU) 2019/790 of the European Parliament and of the Council of 17 April 2019 on copyright and related rights in the Digital Single Market and amending Directives 96/9/EC and 2001/29/EC.

The apocalypse of NFTs in China?

Crypto-related activities have posed two serious issues in China, namely financial stability and energy consumption.¹⁶¹ Proof-of-work cryptocurrencies have been widely condemned for being obscenely harmful to the environment, because each transaction or recording of an artwork requires massive computing power.¹⁶² Chinese government also wants to shut down cryptocurrency-mining activities because they consume massive amounts of electricity, often from coal-fired power plants, while the country has pledged to manage its carbon emissions.¹⁶³ In response, China's National Development and Reform Commission claimed to take proper measurements to cut off financial support and electricity supply for mining.¹⁶⁴

Currently, China does not have clear rules around NFTs, but the country has had a long tradition of stamping out speculation of any kind on the grounds of financial stability.¹⁶⁵ Although cryptocurrencies were prohibited in mainland China, the CEO of Red Date Technology, a company that provides technical support to BSN, guaranteed that 'NFTs have no legal issue in China so long as they distance themselves from cryptocurrencies like bitcoin'.¹⁶⁶ And Chen Xiaohua, director of China Mobile Communications Association's Blockchain Technology Professional Committee, claimed that 'de-monetize is the key to opening up a secondary market for NFT digital collections'.¹⁶⁷

Particularly, the aim to 'de-monetize' and 'de-financialize' NFTs was addressed in various state policies. This means, the very idea of minting NFTs from copyright works and trading them as cryptocurrencies in digital world is disruptive in China. The attitude towards NFTs in this judgment is in line with the purpose of 'curbing the tendency of financial securitization of NFTs and strictly preventing the risk of illegal financial activities' stipulated in the Initiative on Preventing Financial Risks Related to NFTs jointly issued by the Financial Regulatory Authorities on April 13, 2022.¹⁶⁸ It is reasonable to speculate that subsequent NFT-related decisions will follow this policy, posing a potential threat for NFT marketplaces. Unsurprisingly, Huanhe APP, an NFT trading platform run by Tencent, suspended all sales on its platform on June 21st, and finally announced that it would halt its primary services and offer refunds to NFT owners on August 18th.¹⁶⁹

Instead, China plans to place the NFT industry under the surveillance of national institutions with a comprehensive regulatory framework. At the state level, the *14th Five-Year Plan on Digital Economy Development*, issued by the State Council on 12 December 2021, endorsed a target that will increase

¹⁶¹ John A, Shen S & Wilson T, 'China's top regulators ban crypto trading and mining, sending bitcoin tumbling' (Reuters, 24 September 2021) <<https://www.reuters.com/world/china/china-central-bank-vows-crackdown-cryptocurrency-trading-2021-09-24/>> accessed 30 August 2022.

¹⁶² Gural N, 'How the Cryptocurrency Crash Could Impact NFT Art Sales With Ethereum' (FORBES, 19 May 2021) <<https://www.forbes.com/sites/natashagural/2021/05/19/how-the-cryptocurrency-crash-could-impact-nft-art-sales-with-ethereum/>> accessed 30 August 2022.

¹⁶³ Jiang S et al, 'Policy assessments for the carbon emission flows and sustainability of Bitcoin blockchain operation in China' (2021) 12 Nature Communications 1.

¹⁶⁴ National Development and Reform Commission and other departments issued Notice on the Regulation of Virtual Currency Mining Activities (Issued by The State Council, 3 September 2021) <http://www.gov.cn/zhengce/zhengceku/2021-09/25/content_5639225.htm> accessed 30 August 2022.

¹⁶⁵ Ye J, 'Chinese tech giants vow to stop NFT secondary trading -state media' (Reuters, 30 June 2022) <<https://www.reuters.com/business/finance/chinese-tech-giants-vow-stop-nft-secondary-trading-state-media-2022-06-30/#:~:text=China%20does%20not%20have%20clear,%2C%20for%20instance%2C%20is%20banned>> accessed 30 August 2022.

¹⁶⁶ McGregor G, 'China banned cryptocurrencies, but it's going all in on NFTs' (Fortune, 14 January 2022) <<https://fortune.com/2022/01/14/china-nfts-cryptocurrency-bitcoin-blockchain-ban/>> accessed 30 August 2022.

¹⁶⁷ Hu T and Jia J, 'NFT mania fades away and legal compliance of NFTs' (21st Century Business Herald, 26 July 2022) <<https://www.163.com/dy/article/HD7JVD705199NP9P.html>> accessed 30 August 2022.

¹⁶⁸ 'Initiative to Prevent NFT-related Financial Risks' (Xinhua Net, 14 April 2022) <http://www.news.cn/2022-04/14/c_1128560570.htm> accessed 30 August 2022. See also 'China warns of NFT-related financial risks' (Reuters, 13 April 2022) <<https://www.reuters.com/technology/china-warns-nft-related-financial-risks-2022-04-13/>> accessed 30 August 2022.

¹⁶⁹ Zhuang J, 'Tencent's NFT Platform Halts Primary Services Amid Regulatory Concerns' (Sixth Tone, 19 August 2022) <https://www.sixthtone.com/news/1011022/tencents-nft-platform-halts-primary-services-amid-regulatory-concerns?source=channel_rising> accessed 30 August 2022.

the added value of core industries in the digital economy to 10 percent of the GDP by 2025.¹⁷⁰ Then China publicly unveiled Blockchain Services Network Distributed Digital Certificates (BSN-DDC) on January 25 January 2022, aiming to establish an NFT industry based on state-backed blockchain infrastructure.¹⁷¹ However, unlike the global market platforms, the intended NFT industry has no connection to cryptocurrencies, and was primarily constructed to build a varied, open, trustworthy, and stable national infrastructure that allows businesses and individuals to design applications and portals to manage tokens.¹⁷² Following the policy, Shanghai vowed to take the lead in supporting NFT-related industries. On 12 July, the Government of Shanghai issued the *14th Five Year Plan on Shanghai Digital Economy Development*, endeavouring to support leading companies to promote the construction of NFT trading platforms and the exploration of diverse NFT business models in Shanghai.¹⁷³ Thus, it is too early to conclusively declare the end of NFT business in China.

Digital exhaustion to NFT Transactions?

Since the invention of the Internet, there has been fierce debate over whether the exhaustion doctrine can be applied to the digital world. This discussion has intensified after the emergence of second-hand transaction businesses of e-books, digital music and software that have led to various legal disputes.

To some extent, some Chinese scholars argue that this debate depends on whether the transfer of digital works in the virtual world leads to the same legal consequence as transfer of ownership in the physical space. According to the principle of technological neutrality, the sale of online digital works and the sale of tangible works offline are functionally equivalent and, therefore, should be treated equally by copyright law. In particular, current technology is able to ensure the sale of digital work achieves the same legal consequences as the sale of physical work. The forward-and-deletion technology prevents the reproduction of a permanent copy, and blockchain technology could record all data related to a particular transaction, making the resale of digital copies transparent, reliable, and traceable.¹⁷⁴ Thus, digital exhaustion might be applicable to the sale of digital works online.

Scholars also refer to EU and U.S. case laws¹⁷⁵ and share a different view that the core feature of the right of distribution is the 'transfer of ownership', regardless of whether the carrier of the work is tangible or intangible.¹⁷⁶ As a consequence, a flexible interpretation of right of distribution is desirable. One applicable approach is to broadly construe the term 'copy' to cover both physical copies distributed offline and digital copies distributed online.¹⁷⁷

¹⁷⁰ 'Digital economic growth plan unveiled' (China Daily, 20 January 2022) <http://english.www.gov.cn/policies/policy-watch/202201/20/content_WS61e8a11bc6d09c94e48a3f04.html> accessed 30 August 2022.

¹⁷¹ Ke X, 'BSN-DDC Guarantees the Compliance of NFT Technology in China' (Xinhua Net, 25 January 2022) <<http://tech.china.com.cn/hydr/20220125/384565.shtml>> accessed 30 August 2022.

¹⁷² Ibid.

¹⁷³ *The General Office of Shanghai Municipal People's Government issued the 14th Five Year Plan of Shanghai Digital Economy Development*. (Issued by Shanghai Government, 12 July 2022) <<https://www.shanghai.gov.cn/hfbf2022/20220712/d3f5206dec5f4010a6065b4aa2c1ccce.html>> accessed 30 August 2022. See also 'Shanghai might become China's first city for NFT-related industries' (CGTN, 15 July 2022) <<https://news.cgtn.com/news/2022-07-15/Shanghai-might-become-China-s-first-city-for-NFT-related-industries-1bH9ooz3Y64/index.html>> accessed 30 August 2022.

¹⁷⁴ See Mezei P (n 144) 191.

¹⁷⁵ *UsedSoft GmbH v. Oracle International Corp*, Case C-128/11, ECLI:EU:C:2012:407; *Capitol Records, LLC v. ReDigi Inc.*, 934 F.Supp.2d 640 (2013).

¹⁷⁶ He H, 'Right of Distribution in the Digital Environment' (2013) 5 *Journal of Zhejiang University* 150; Wei W, 'On Application of Exhaustion Doctrine to the Resale of Digital Works' (2014) 6 *Intellectual Property* 21; Lu C, 'On Extension of Application of Exhaustion Doctrine in Digital Environment' (2015) 3 *Electronics Intellectual Property* 51; He L and Deng X, 'Copyright Regulation on the Resale of Digital Works: Limited Exhaustion Doctrine to Digital Right of Distribution' (2014) 5 *Studies in Law and Business* 22.

¹⁷⁷ Ibid, see He H, Wei W and Lu C.

By adopting the above analysis, some seek the applicability of the exhaustion doctrine in NFT transactions.¹⁷⁸ Contrary to the opinion held by the Hangzhou Internet Court, Tao Qian argued that, in NFT transactions, a transferee who legally acquires an 'NFT digital work' from the copyright holder can resell it on the same or other partner trading platform without uploading the digital work. A buyer of a 'second-hand NFT digital work' can also become the owner of the NFT digital work without downloading it. That is to say, no new copy is produced in the whole transaction.¹⁷⁹ No matter how many times an NFT digital work are traded, what is displayed on the trading platform would always be the same copy that the minter originally uploaded to the server. Therefore, the limitation of right of the distribution should be extended to the digital environment, so that the transaction of NFT digital works should be subject to the right of distribution.¹⁸⁰

However, the above analogy is untenable. Transactions of digital works are different from NFT transactions. In essence, NFTs are merely metadata representing tangible and intangible items, but not the items themselves.¹⁸¹ An NFT merely serves as a proof of ownership and digital ledger entry for the tokenized digital work. This said, 'the sale of an NFT is nothing more than the sale of a digital token comprised of hash code created by inputting data from a digital work into an algorithm.'¹⁸² The owner of an NFT obtains property rights to transfer, destroy, display, gift and resell the token, but not ownership or copyright of the associated work, unless otherwise stated on the contract terms. The applicability of exhaustion doctrine to the resale of digital work is irrelevant in this case.

A copyright dilemma?

Statistics show that the resale of NFTs is not available on the vast majority (71%) of Chinese NFT trading platforms, and the secondary market of NFTs in China is still in its infancy.¹⁸³ The NFTCN operated by Bigverse allows users to resell and gift their NFTs while charging a certain percentage of the sale price from the first sale, and a portion of the margin as a commission from resale.¹⁸⁴ Nevertheless, the Hangzhou Internet Court does not offer a detailed discussion on the legal status of the resale of NFTs in this judgment.

Imagine the scenario where a user minted and sold an NFT without authorization, then the purchaser resold the purchased NFT. Does the resale of an unauthorized minted NFT infringe the right of communication through information network of the copyright owner? As concluded by the Hangzhou Internet Court, the sale of an NFT constitutes an act of communication through information network rather than distribution,¹⁸⁵ as it allows the public to access the digital work at a time and from a place individually chosen by them. However, the resale of an NFT to the subsequent buyer after the first sale involves nothing more than a transfer of a token. Subsequently, it looks plausible that it does not constitute an act of communication to the public *per se* because the NFT is only available to the purchaser who obtains the private key. As a consequence, the court is confronted with an embarrassing dilemma: further resale of a specific NFT does not constitute an act of distribution or communication through information network.

¹⁷⁸ Qi A, 'Analysis of Legal Question in the First NFT-related Case' (ChinaPer, 22 April 2022) <<https://mp.weixin.qq.com/s/MYDzUMmo-Y47vS0vOGFDQ>> accessed 30 August 2022; Wang Y, 'Some Controversial Issues of the First Decision on NFT digital works' (Chance Bridge Law Firm, 7 May 2022) <<https://chancebridge.com/article/?id=1972>> accessed 30 August 2022.

¹⁷⁹ Tao Q, 'Legal Status of NFT Digital Work Transaction' (2022) 2 Oriental Law 70, 78.

¹⁸⁰ Ibid 77–78.

¹⁸¹ Bodó B et al (n 44) 277.

¹⁸² See García K (n 100) 34.

¹⁸³ See Ding Shaogong (n 95).

¹⁸⁴ T&Cs of NFTCN (n 89).

¹⁸⁵ Bigverse (n 126).

Furthermore, due to the inapplicability of the exhaustion doctrine, those agreements that restrict the buyers' right to resell lawfully minted NFTs fall within the scope of freedom of contract. Whether the NFTs can be resold primarily depends on the T&Cs or the contract.¹⁸⁶ If the agreement improperly infringes upon the rights and interests of consumers, or hampers market competence, one can only turn to the *Anti-Monopoly Law* or the *Consumer Protection Law*, but not copyright law.

It seems that there is no flawless answer to the question of whether the sale of NFTs is subject to the right of distribution or the right of communication through information network. On the one hand, since there is no transfer of ownership of a work in an NFT transaction, there are legal barriers to the application of the right of distribution. On the other hand, if we opt for the application of the right of communication through information network in sales of NFTs, it avoids the tricky issue of identifying a 'tangible carrier' but leads to more legal uncertainties, including the legal nature of resale of unauthorized NFTs, and the interpretation of the T&Cs or contracts. Moreover, many disputes over the resale of NFTs will likely depend on how the terms of the agreement are interpreted, thereby impeding the development of a potential secondary market. However, in the absence of relevant legislation and judicial guidance, platforms are expected to provide sufficiently explicit rules on the sale and resale of NFTs. For example, platforms should be required to fulfil the obligations of a prohibition on misrepresentation, and a requirement for truthful disclosure.¹⁸⁷

A quasi-resale royalty right?

Like the US, China is also an outlier in the resale royalty right system. In retrospect, Chinese legislators held different opinions on the contentious question of whether to introduce a resale royalty right (or *droit de suite*) in the third amendment to the Chinese Copyright Law. Based on Article 14ter of the Berne Convention, the first and second drafts of the third amendment even include a provision that grants an author and his or her inheritors or devisees an inalienable and unwaivable right to share the proceeds from each resale of the original work or manuscript.¹⁸⁸ In the end, considering the enforceability concerns of resale royalty right in China, the National People's Congress Standing Committee agreed to delete the provision of resale royalty right in the third amendment.¹⁸⁹ Therefore, 'starving artists' have no right to royalties for sales of their work after the first sale in China.¹⁹⁰

Resale royalty right allows authors to share profits generated from each resale of their original works under certain circumstances. Take the Resale Royalty Right Directive as an example, an author may claim resale royalty right if the resale meets certain requirements set out in the Directive, including 'the contribution of art market professionals to the resale, the elapse of 3 years since the original acquisition of the artwork, and a minimum threshold for the purchase price of the artwork'.¹⁹¹ Additionally, the ownership of the original work must be transferred to earn remuneration under the resale royalty right. The resale royalty right does not apply to the resale of NFTs, simply because it does not involve the transfer of ownership of the tokenized work. The resale royalty rights regime applies only if the ownership of the NFT and the work align.¹⁹²

¹⁸⁶ See Carroll R (n 52) 997.

¹⁸⁷ See García K (n 100) 55.

¹⁸⁸ In the second draft, the resale royalty right only applies to original works of fine art, original photographic works and original manuscripts of writers and composers.

¹⁸⁹ Dai Z, 'Research on the Legitimacy of Droit de Suite in China' (2020) 4 Northern Legal Science 42.

¹⁹⁰ Schten A, 'No More Starving Artists: Why the Art Market Needs a Universal Artist Resale Royalty Right' (2017) 17 *Notre Dame J. Int'l & Comp. L.* 115.

¹⁹¹ Bodó B et al (n 44) 277–78.

¹⁹² Bodó B et al (n 44) 278.

Nonetheless, the current NFT business models provide an alternative means of remuneration for creators, or a quasi-resale royalty right, that allows creators to collect royalties upon subsequent resale of the NFT.¹⁹³ During the minting process of an NFT, authors are allowed to receive a certain percentage of the sale price or margin for each resale through smart contracts. Creators automatically receive royalties from resales of their NFTs, without meeting the conditions of a resale royalty right regulated under copyright laws. Unlike the resale royalty right granted by copyright law, this ‘quasi-resale royalty right’ is merely a contractual obligation.¹⁹⁴

At present, mainstream NFT trading platforms allow artists to receive a certain percentage of royalties from the subsequent resale of NFTs. For the majority of NFT trading platforms, royalties are guaranteed by a predetermined self-executing program coded in a smart contract linked to the NFT. Royalties are collected primarily in two ways: either by setting a default fixed percentage, or by allowing the creator to set the percentage freely within a certain range. Take NFTCN and OpenSea for examples, NFTCN allows creators to share a certain percentage of the margin of the resale;¹⁹⁵ artists can set their own royalties of no more than 10% on OpenSea.¹⁹⁶ More importantly, in NFT transactions, the copyright of tokenized work is still under the control of right holders.

However, this quasi-resale royalty right is not unconditional. Currently, the royalty is only recognized if the resale occurs on the same platform. Programmers have proposed standards like ERC-1190 or EIP-2981 which enable the creators to receive royalties for each transaction across multiple platforms, although the system is still voluntary in that a platform must opt in to provide it.¹⁹⁷ Besides technological improvements, interoperability across marketplaces should be taken into consideration as well. To better ensure fair renumerations for creators, some suggests platforms to explore smart contract standards to contain a uniform code for programming royalties.¹⁹⁸ Of course, a well-rounded regulatory framework on resale of NFTs would provide a major long-term benefit to artists and creators of digital assets.

As Fairfield observes, ‘[p]eople purchase NFTs with the expectation of capturing the value of resale’.¹⁹⁹ Imagine that the creators of NFTs are able to be remunerated with a quasi-resale royalty right, while other creators cannot obtain any royalties for resales of their works in China. Thus, Chinese creators certainly have an incentive to mint and sell NFTs of their works, as NFTs serve as a simple but effective tool to collect royalties that they cannot obtain from the resale of original works. Francis Gurry, the former WIPO Director General, suggested that ‘[t]he digital environment and the globalization of markets present both vulnerabilities and opportunities, and it is appropriate that we consider how we might address the gaps that exist in connection with the artist’s resale royalty right’.²⁰⁰ It may take a long time for legislative authority to finally introduce a resale royalty right in the fourth amendment of Chinese Copyright Law, because there is an unending list of practical considerations impeding the introduction of a resale royalty right in China, such as identifying original ownership, setting reasonable royalty rates, balancing the interests of all parties involved, and lessening the impact on the traditional art market, among others. However, the NFT business models serve as a grounding and instructive

¹⁹³ See Lee E (n 96) 4.

¹⁹⁴ See See Çağlayan Aksoy P & Özkan Üner Z (n 34) 1126.

¹⁹⁵ T&Cs of NFTCN (n 89).

¹⁹⁶ <<https://docs.opensea.io/docs/10-setting-fees-on-secondary-sales>> accessed 30 August 2022.

¹⁹⁷ ‘Non-fungible royalty token #1190’ <<https://github.com/ethereum/EIPs/issues/1190>> accessed 30 August 2022; ‘EIP-2981: NFT Royalty Standard’ <<https://eips.ethereum.org/EIPS/eip-2981>> accessed 30 August 2022.

¹⁹⁸ See Carroll R (n 52) 1002.

¹⁹⁹ See Fairfield (n 28) 1306.

²⁰⁰ See Jewell C, ‘The artist’s resale right: a fair deal for visual artist’ (WIPO MAGAZINE, June 2017) <https://www.wipo.int/wipo_magazine/en/2017/03/article_0001.html> accessed 30 August 2022.

example for remuneration for creators, and also provide practical experiences for legislation of resale royalty right in the future.

CONCLUSION

China fronts the world in the development of the digital economy, as it maintained an exponential growth rate of 16.2 percent to US\$7.1 trillion in 2021, reaching upwards of an estimated 39.8 percent of the national GDP.²⁰¹ Specifically, China's blockchain market may be valued at more than US\$3.2 billion by 2025, with a compound annual growth rate of 47 percent between 2020 and 2025.²⁰² Despite the high-speed growth during the past years, we must be aware of the legal uncertainties and questions stemming from the decentralized nature of the blockchain technology and the centralized nature of the Chinese regulatory frameworks. On 25 May 2022, Supreme People's Court issued the *Opinions of the Supreme People's Court on Strengthening Blockchain Application in the Judicial Field*, officially including blockchain technology into the realm of legal governance.²⁰³ Meanwhile, the country has to achieve a fair balance between scrutinous regulatory measures and sustainable innovation stimulation.

As of late, NFT mania is sweeping the globe, presenting the global digital economy with a range of dynamic growth and unprecedented investment opportunities. Like every technological development, many uncertainties arise from NFT technology. Although the legal answers to NFT-related copyright issues differ from one jurisdiction to another, the first Chinese NFT-related copyright ruling may serve as an instructive example for both judicial and business practices of IP-related NFTs nationally and internationally. The Bigverse case shows that, to some extent, the minting and selling of NFTs might fall within the scope of right of communication through information networks. Moreover, it provides a detailed analysis on liability of NFT trading platforms, including a higher duty of care and *ex ante* monitoring obligation.

As NFT technology continues to evolve, more examples of NFT-related copyright disputes might emerge in the near future. Even though most disputes can be covered by T&Cs or contracts at the platform level, questions concerning the resale of NFTs, NFTs of AI-generated works, fair use, and digital exhaustion remain unanswered. On the one hand, a well-rounded legal framework will better diminish the above uncertainties and promote the NFT-related industry. On the other hand, platforms are expected to play the role of gatekeeper in monitoring potential illegal activities. Besides, platforms are encouraged to proactively set the best industry practices and explore more diverse business models. Apart from copyright concerns, there are many other legal issues such as security of personal information, legal nature of virtual property and scrutiny of monopolistic behaviours, among others, that need to be addressed. Time will reveal how these challenges will be dealt with and whether the current regulatory framework is sufficient.

²⁰¹ 'China's Digital Economy exceeds 45 trillion Yuan' (People's Daily, 3 July 2022) <http://www.gov.cn/shuju/2022-07/03/content_5699000.htm> accessed 30 August 2022. See also Yi W, 'Understanding China's Digital Economy: Policies, Opportunities, and Challenges' (China Briefing, 30 August 2022) <<https://www.china-briefing.com/news/understanding-chinas-digital-economy-policies-opportunities-and-challenges/>> accessed 30 August 2022.

²⁰² Interesse G, 'Is Web 3.0 China's Next Big Thing?' (China Briefing, 27 July 2022) <<https://www.china-briefing.com/news/is-web-3-0-chinas-next-big-thing-opportunities-market-r-and-d-investment/>> accessed 30 August 2022.

²⁰³ *Opinions of the Supreme People's Court on Strengthening Blockchain Application in the Judicial Field* (Issued by the People's Supreme Court, 25 May 2022) <<https://www.court.gov.cn/zixun-xiangqing-360271.html>> accessed 30 August 2022.