

INTERRELATIONSHIP BETWEEN NON-FUNGIBLE TOKEN AND INTELLECTUAL PROPERTY RIGHTS: A STUDY

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Submitted by
Abhishek Sharma
UID No. SM0221001
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Supervised by
Dr. Jupi Gogoi
Associate Professor of Law

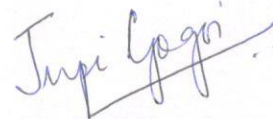


National Law University and Judicial Academy, Assam
June/2022

SUPERVISOR CERTIFICATE

It is to certify that Mr. Abhishek Sharma is pursuing Master of Laws (LL.M.) from National Law University, Assam and has completed his dissertation titled "INTERRELATIONSHIP BETWEEN NON-FUNGIBLE TOKEN AND INTELLECTUAL PROPERTY RIGHTS: A STUDY" under my supervision.

Date: 08/07/22



Dr. Jupi Gogoi

Associate Professor of Law

DECLARATION

I, Abhishek Sharma, pursuing Master of Laws (LL.M.) from National Law University, Assam, do hereby declare that the present dissertation titled “INTERRELATIONSHIP BETWEEN NON-FUNGIBLE TOKEN AND INTELLECTUAL PROPERTY RIGHTS: A STUDY” is an original research work and has not been submitted, either in part or full anywhere else for any purpose, academic or otherwise, to the best of my knowledge.

Date: 11.07.2022

Abhishek Sharma

UID SM0221001

Abhishek Sharma

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Abhishek Sharma

TABLE OF CASES

1. *Beta Computers (Europe) Ltd v Adobe Systems (Europe) Ltd*
2. *Brigid Foley & Hunter v. Elliott*
3. *Blanch v. Koons*
4. *Cariou v. Prince*
5. *Dallas Cowboys Cheerleaders, Inc. v. Pussycat Cinema, Ltd*
6. *Dramatico Entertainment Ltd & Ors v. British Sky Broadcasting Ltd & Ors*
7. *GS Media BV v Sanoma Media Netherlands BV and Others*
8. *Hermes International et al v. Rothschild*
9. *J & S Davis (Holding) Limited v Wright Health Group*
10. *Jordan v. Jewel Food Stores, Inc.*
11. *Miramax, LLC v. Quentin Tarantino et al*
12. *Nils Svensson and Others v Retriever Sverige AB*
13. *Roc-A-Fella Records v. Dash*
14. *Rogers v. Grimaldi*
15. *Roger v. Koons*
16. *SGAE v Rafael Hoteles*
17. *Stouffer v. Nat'l Geographic Partners, LLC*
18. *TamarindArt, LLC v. Husain et al*
19. *The Chancellor Master & Scholars of the University of Oxford v. Narendra Publishing House and Ors*

TABLE OF STATUTES

International Instruments

1957 - International Classification of Goods and Services (Nice Agreement)

1967- Convention Establishing the World Intellectual Property Organization

1995 – Trade Related Aspects of Intellectual Property Rights Agreement

National

India:

1957- The Copyright Act

1970- The Patent Act

1999- The Trademark Act

2000- The Information Technology Act

United States of America:

1946 – The Lanham Act (15 U.S.C. §§ 1051–1127)

1976 – The Copyright Act (17 U.S.C. §§ 101-1511)

TABLE OF ABBREVIATION

SL. NO.	ABBREVIATIONS	MEANING
1.	Anr.	Another
2.	DAO	Decentralized Autonomous Organization
3.	Ed.	Edition
4.	ERC	Ethereum requests for comment
5.	Et al.	Et alia
6.	HC	High Court
7.	IOT	Internet of Things
8.	IP	Intellectual Property
9.	IPFS	InterPlanetary File System
10.	IPR	Intellectual Property Rights
11.	IT	Information Technology
12.	NFTs	Non- Fungible Tokens
13.	P2P	Peer to Peer
14.	Rev.	Review
15.	SC	Supreme Court
16.	TRIPs	Trade related to Intellectual Property Rights

17.	U.S.C.	United State code
18.	WIPO	World Intellectual Property Organization

TABLE OF CONTENTS

Declaration	
Acknowledgement.....	i
List of Cases.....	iii
List of Statutes	iv
List of Abbreviations.....	v
1. Introduction.....	1
1.1. Statement of Problem.....	3
1.2. Research Aim(s).....	4
1.3. Research Objectives.....	4
1.4. Scope and Limitations.....	4
1.5. Research Questions.....	4
1.6. Research Methodology.....	5
1.7. Research Design.....	5
2. Demystifying Non-Fungible Tokens	8
2.1. An Overview of Blockchain Technology	8
2.1.1. Elements of Blockchain Technology	11
2.1.1.1. Block	
2.1.1.2. Cryptographic Hash Functions	
2.1.1.3. Mining	
2.1.1.4. Nodes	
2.1.1.5. Smart Contracts	

2.1.2. <i>Blockchain Technology – Working and Functioning</i>	16
2.1.3. <i>Concept of Tokens</i>	19
2.2. Working Principle of Non-Fungible Tokens	21
2.2.1. <i>NFT Token Standards</i>	24
2.2.2. <i>Characteristics of Non-Fungible Tokens</i>	25
2.2.3. <i>Indicative Use Case of Non-Fungible Tokens</i>	27
2.2.3.1. <i>Gaming Collectibles</i>	
2.2.3.2. <i>NFT Art</i>	
2.2.3.3. <i>Musical Royalties</i>	
2.2.3.4. <i>Supply chain</i>	
3. The Invisible Strings Attached: Non-Fungible Token and its Interplay with IPR	31
3.1. Hermes International et al v. Rothschild	34
3.2. Miramax, LLC v. Quentin Tarantino et al	35
3.3. Roc-A-Fella Records v. Dash	38
3.4. TamarindArt, LLC v. Husain et al	39
4. Analyses of Issues and Concerns arising out of NFT and IPR	41
4.1. Copyright Implication of Non-Fungible Tokens	41
4.1.1. <i>Copyright Protection to Non-Fungible Tokens</i>	42
4.1.2. <i>Non-Fungible Token and Copyright Infringement</i>	45
4.1.2.1. <i>Is NFT a transformative artwork or a vehicle for commerce?</i>	
4.1.2.2. <i>Art Appropriation and fair use as defense</i>	
4.1.2.3. <i>NFT as a medium for appropriation</i>	
4.2 Non-Fungible Token and Trademark law	64

4.2.1. Can a Non-Fungible Token be Trademarked?	64
<i>4.2.1.1. NICE Classification with respect to Non-Fungible Tokens</i>	
4.2.2. Trademark Infringement by Non-Fungible Tokens	66
<i>4.2.2.1. Trademark Rights Art Appropriation</i>	
4.3. Non-Fungible Tokens and Personality Rights	72
4.4. Patent Law Implication of Non-Fungible Tokens	74
<i>4.4.1. NFT as a Tool for Transfer of Patent Assets</i>	74
<i>4.4.2. NFT Related Inventions</i>	77
5. Digital Right Management by NFTs	79
5.1. Assignment	79
6. Conclusion	83
Bibliography	x

CHAPTER – 1

INTRODUCTION

“When it comes to Intellectual property rights, not everything that glitters is gold”

- Dr Benjamin Mitra-Kahn

Since the last few years, the world has noticed various unorthodox types of digital assets and virtual currencies which has entered the commercial market. But the rise of Non-Fungible Tokens, which is commonly known as NFTs have change the virtual digital asset industry completely.

NFT was developed during the early years of this century. But they only get popular in the tech world when Dapper Labs, an NFT firm, announced to sell NFTs though a game which is linked to virtual breedable cats known as Crypto Kitties in 2017 and the general public went insane for these Crypto Kitties.¹ Since this date more than 2 crores Crypto Kitties has been sold by Dapper Labs. Not a long time ago NFTs has shook the art world with storm with sale of NFT based artwork at millions of dollars, as compared to fine art. The first NFT of Christie’s– a “conventional” auction house has sold a popular piece by Beeple titled “Everydays: The First 5,000 Days” for a whopping sum of \$69 million.² Also, world’s first tweet has been auctioned as an NFT by Twitter’s CEO, Jack Dorsey named “just setting up my twttr”, which was sold for more than 2.9 million dollars³ and a marketplace named NBA Top Shot which is owned by Dapper Labs has crossed the US\$500 million mark, which makes it the most successful NFT marketplace till this day.⁴ This sudden rise of NFTs is not limited to the western countries but the effect of the rise of

¹ Tomio Geron, ‘How Dapper Labs scored NBA crypto millions’ (Protocol, 13 March, 2021) <<https://www.protocol.com/fintech/dapper-labs-nba-top-shots>> accessed 24 March, 2022.

² Abram Brown, ‘Beeple NFT Sells For \$69.3 Million, Becoming Most-Expensive Ever’ (Forbes 11 March, 2021) <<https://www.forbes.com/sites/abrambrown/2021/03/11/beeple-art-sells-for-693-million-becoming-most-expensive-nft-ever/?sh=7945f5992448>> accessed 24 March, 2022.

³ Isabelle Lee, ‘Twitter CEO Jack Dorsey’s first-ever tweet sold for \$2.9 million as an NFT’ (Business Insider 30 October, 2021) <<https://www.businessinsider.in/stock-market/news/twitter-ceo-jack-dorseys-first-ever-tweet-sold-for-2-9-million-as-an-nft/articleshow/81639599.cms#:~:text=Twitter%20CEO%20Jack%20Dorsey%20has, and%20 is %20based%20in%20Malaysia>> accessed 24 March, 2022.

⁴ Tomio Geron, ‘How Dapper Labs scored NBA crypto millions’ (Protocol, 13 March, 2021) <<https://www.protocol.com/fintech/dapper-labs-nba-top-shots>> accessed 24 March, 2022.

NFTs could be seen in India as well. Amitabh Bachchan has sold his NFT collection for more than 7 crore Rupees.⁵ Also, Indian Cricket Team Captain Rohit Sharma has announced to launch his NFT collection.⁶ Be it entertainment or sports industry or any other field NFT has disrupted the market. So, now the question arises What are NFTs and why are they being sold for millions? In this research work, the researcher has tried to answer these questions.

The NFTs have been the talk of discussion for some years now. They can have various different use cases, due to their exclusive attributes of encouraging innovation and increase earnings for both NFT minters and buyers of NFT. Nonetheless, as the innovative work merge with the NFT market, the advantage in the form of innovation and increased revenue of creators through NFTs does not come so easily as the rise of NFT have some legal ramifications attached to it pertaining to intellectual property rights. In this research work, the researcher has discussed various legal issues that stand behind NFTs and tried to clear some air which surrounded the NFT by analyzing various aspects of NFTs as well as Intellectual Property Rights Law.

This research work talks about some of the novel legal implication that non-fungible tokens (NFTs) have on IPR law, including key issues like copyright infringement, ownership considerations, appropriation of art, trademark infringement, copyfraud, etc. The article also tries to explain the working of NFT which is based on Blockchain technology while at the same time discussing the various aspects of Blockchain technology. In this research work, the researcher has discussed major Intellectual Property Rights which have certain implication on NFT. This research work basically investigates a two-fold in-depth exploration— firstly to pose questions and seek answer about the NFTs and their working, and the secondly is to understand the implication of NFTs on IPR Law. This research work firstly focusses on the blockchain technology that runs NFTs along with discussing the

⁵ ‘Shubham Raj, ‘Amitabh Bachchan’s NFT collection sold for Rs 7.18 crore’ (The Economic Times 5 November, 2021) < <https://economictimes.indiatimes.com/markets/cryptocurrency/amitabh-bachchans-nft-collection-auctioned-at-record-1-million/articleshow/87539323.cms?from=mdr>> accessed 24 March, 2021.

⁶ Jigyanshushri Mahanta, ‘Rohit Sharma Announces NFT Collection Inspired by Personal Memorabilia on FanCraze’ (Republic World 25 December, 2021) < <https://www.republicworld.com/sports-news/cricket-news/rohit-sharma-announces-nft-collection-inspired-by-personal-memorabilia-onfancraze.html>> accessed 24 March, 2022.

various components of it. It then shed some light on the mystical nature of NFT by turning to the meaning of NFTs, its characteristics, its uses, working methodology, and the reason for their popularity. Eventually, issues pertaining to IPR and their infringement come into the highlight, which the research work explains with the help of cases related to NFTs. After that the researcher has discussed the IP management aspect with special focus on IP assignment and at last, the researcher will give a critical analysis of the existing legislations and gaps; along with providing suggestions which can benefit NFT minters to extract more from their hard work and thereby benefiting the tech ecosystem without tangling into the legal gaps associated with NFTs.

1.1. Statement of problem

From lack of recognition only a few years back, recognition among general public of NFTs has rose exponentially. This awareness among general public has grown due to the fact that they are being used in relation with various digital assets i.e., digital art, and often sold for extremely high prices.

Nevertheless, views on Non-Fungible Tokens are divided between two viewpoints. On one side, NFTs are being seen as support system which has huge potential to bring revolution by empowering digital artists, improving their revenue and reshaping the virtual art markets. And on the other extreme, they are seen as one of the instances where technology have ground breaking legal implications on copyright law.

These tokens can be used in many different ways that can have various legal ramifications associated with it in relation to copyright laws. So, from that viewpoint, they can be viewed as one of the latest examples of the opportunities and threats associated with distributed ledger technology in the area of copyright law between the digital artist and copyright holder.

Also, there is a tussle going around between the NFT creators and IPright owners in respect to the intellectual property rights on the NFT. And this problem arises due to the fact that there is currently no law which govern or regulate the legal issues related to NFT and the current IPR regime has various lacunae to deal with the complexities of NFT. Therefore, in order to check the misappropriation of intellectual property rights in respect to NFTs

and to regulate the commercialization of NFTs, the need of the hour is to harmonize the national and global norms and prepare a regulatory framework at the institutional level at both the stages so that coherency is maintained and all these demands could meet.

1.2. Research Aims:

The aim of this research study is to understand the rise of NFTs in the globalized world and to analyze the various legal ramifications of NFTs along with providing various suggestions related to it. Also, the research aims to find whether there is a need to have a new legislation to deal with IP related aspects of NFT or the existing legal framework is sufficient.

1.3. Research Objectives:

The objectives of the study are as follows:

- To analyze the rise of NFTs in the virtual world.
- To find out the lacuna in the implementation of the rights of NFT owners in commercialization.
- To find out whether any existing law under intellectual property right can grant protection to NFTs or not.
- To analyze the various judicial decisions related to NFTs.
- To find out whether the doctrine of fair use could be applied in the case of appropriation of NFTs
- To find out Whether the Digital artworks or NFT could be equated with the traditional artworks?
- Whether the owner of the NFT get the copyright on the underlying assets?

1.4. Scope and Limitations:

The scope of this research is to understand the reason or cause for the rise in popularity of Non – Fungible Tokens along with understanding the working principle of NFTs and to analyze various legal implications that stand around NFTs. Due to limited time and not financially viable, consequently the researcher has limited the research only to study the potential Intellectual Property rights implications by the use of NFTs.

1.5. Research Questions

1. Whether IPR regime can offer protection to NFT owners?
2. How the rise of NFT is going to affects the various economic rights of IPR owners?
3. Whether a sui generis law would be able curb the problem of misappropriation and to protect NFT?
4. whether the defense of fair dealing could be taken for appropriation of NFTs?

1.6. Research Methodology

In this dissertation, the researcher has adopted Doctrinal research.

Doctrinal research is similar to a library-based study, which imply that the research materials and resources needed by the researcher was available in libraries, archives and other data-bases. Along with this the researcher has used various types of books to get some credible data which was essential for this project. At the same time the researcher has make use of computer labs to acquire research material in respect to the topic of this seminar paper. The researcher has also made use of various credible websites which was extremely essential for a good understanding of the subject matter.

Also, the citation has been given as per the OSCOLA (4th ed.).

1.7. Research Design

The NFTs have been the conversation of discussion for some years now. They can have various different use cases, due to their exclusive attributes of encouraging innovation and increase earnings for both NFT minters and buyers of NFT. Nonetheless, as the innovative work merge with the NFT market, the advantage in the form of innovation and increased revenue of creators through NFTs does not come so easily as the rise of NFT have some legal ramifications attached to it pertaining to intellectual property rights. In this research work, the researcher has discussed various legal issues that stand behind NFTs and tried to clear some air which surrounded the NFT by analyzing various aspects of NFTs as well as Copyright Law

This dissertation is divided into six chapters, the details of which are briefed below:

Chapter – I

In this chapter, the researcher has given an overview of the research by giving a brief introduction on NFT along with the review of the existing literature, setting objectives, formulating research questions and type of methodology use. Along with this the researcher has also discussed the statement of problem in this chapter.

Chapter – II

In the second chapter, the researcher has tried to give a conceptual understanding of blockchain technology along with explaining it working and functioning. According to the researcher for understanding NFT it was very essential to comprehend the conceptual understanding of blockchain technology that runs NFT. The researcher in this chapter also discussed the various components of blockchain technology such as smart contracts, peer to peer network, mining, distributed ledger, etc. The researcher further shows the demystification of NFTs by discussing the historical background of NFT, concepts, definitions, significances, legal issues related and use case of NFT. Also, the researcher has illustrated the working principle behind NFT.

Chapter – III

In the third chapter, the researcher shows the interplay of NFTs with the various IPRs by discussing the recent lawsuits which are being filed around the globe in relation to the various IPRs and NFTs.

Chapter – IV

In the fourth chapter, which is the main crux of this research, the researcher out of all the legal ramification of NFT has specifically deal with the legal implication of IPR law on NFT. The IPR laws which are discussed in this chapter are Trademark, Copyright, Patent, and personality right. In this section, the researcher has tried to harmonize the balance between the rights of NFT owner with the rights to IP owner while analyzing the various issues and concerns arising out of NFT and IPR.

Chapter – V

In the fifth chapter, the researcher has discussed about the digital right management aspect of NFT in relation to IPR. In this chapter, the researcher has analyzed the various legal provisions from different legislation to find out their consistency in relation to assignment of IP rights.

Chapter – VI

The researcher has dealt with the conclusion of the research study. the researcher has given a critical analysis of the existing legislations and gaps; along with providing suggestions which can benefit NFT minters to extract more from their hard work and thereby benefiting the tech ecosystem without tangling into the legal gaps associated with NFTs.

Chapter - 2

Demystifying Non-Fungible Tokens

In 1935, Walter Benjamin, a critic and an essayist, wrote an essay titled “The Work of Art in the Age of Mechanical Reproduction.”⁷ This essay gave a novel interpretation to the role of technological reproduction on the value of the art. The essay wrote that art has always been copied but it was always flawed and imperfect by imitators until the arrival of modern technology which brought a sudden change in the art market by which the task of copy became so easy that it could easily perfect the imitations.⁸

Yet the tamperproof public ledgers which are utilized by NFT, are making a new structure of originality, by verifying and authenticating the transaction along with the mechanism to prove ownership of an NFT. Just like the menace of “double spending” is solved by cryptocurrency, NFTs are making a new structure of originality while by transforming the verification system and bringing the concept of provable ownership. NFTs though are a product which stay online in the form of program codes, smart contract and protocols yet they are becoming an epitome of “originality”.⁹

To understand Non- Fungible Tokens and their functioning in the tech world. It is essential to first discuss the blockchain technology on which the NFTs are stored.

2.1. An Overview of Blockchain Technology

As the need for advancement in the current century increases, the science has pushed for rapid development of technologies. Technologies such as Augmented and Virtual reality, Internet of Things (IOT), Blockchain and Machine learning are slowly becoming an integral part of our daily lives. Blockchain is a decentralized database which helps in

⁷ Walter Benjamin, The Work of Art in the Age of Mechanical Reproduction (MIT, 1935) <<https://web.mit.edu/allanmc/www/benjamin.pdf>> accessed 13 may 2020.

⁸ *ibid.*

⁹ Qin Wang, Rujia Li, Qi Wang and Shiping Chen ' Non-Fungible Token (NFT): Overview, Evaluation, Opportunities and Challenges' (Researchgate May2021) <https://www.researchgate.net/publication/351656444_NonFungible_Token_NFT_Overview_Evaluation_Opportunities_and_Challenges>.

information sharing between domains that do not trust each other.¹⁰ Blockchain participates in decision-making process in a cooperative, collaborate, and coordinated manner. Blockchain technology created a major change in the business world and transformed the industry in every aspect. It brings new innovations in supply chain, healthcare, agriculture, banking, etc. by providing trust, security, and transparency.¹¹

The early understanding of blockchain technology appear on to surface around 1990s. In 1990, Leslie Lamport, a computer scientist, submitted a research work titled 'The Part Time Parliament' to a peer-reviewed journal; which was published 8 year later. The study provides a consensus model which help the networks of computers which do not trust each other to reach to a consensus.¹² One year later, a combination of public and private key in respect to a transaction was used in a digital ledger by the help of electronic signature which would help in showing that none of the documents has been tampered.¹³ All these separate technologies were merged and to make a public distributed ledger technology which could be applied to regulate the digital currencies and explained in the research work titled 'Bitcoin: A Peer-to-Peer Electronic Cash System', which was published pseudonymously by using a made-up name Satoshi Nakamoto, and this research paper then converted into a working prototype of cryptocurrency 'Bitcoin'.¹⁴

Blockchain technology is a distributed ledger technology which is federated as it is based on peer-to-peer network and have a public digital ledger which is encrypted and immutable

¹⁰ Javad Zarrin, Hao Wen Phang, Lakshmi Babu Saheer & Bahram Zarrin, 'Blockchain for decentralization of internet: prospects, trends, and challenges' (2021) 24 SpringerLink <<https://link.springer.com/article/10.1007/s10586-021-03301-8>> accessed 13 may 2022.

¹¹ C. Komalavalli, Deepika Saxena and Chetna La roiya, 'Overview of Blockchain Technology Concepts' in Saravanan Krishnan, Valentina Emilia Balas, Julie Golden, Y. Harold Robinson, S. Balaji and Raghvendra Kumar (eds), *Handbook of Research on Blockchain Technology* (Academic Press 2020).

¹² Dylan Yaga, Peter Mell, Nik Roby and Karen Scarfone, 'Blockchain Technology Overview' (National Institute of Standards and Technology Internal Report, 24 October, 2018) <https://www.researchgate.net/publication/334048606_Blockchain_Technology_Overview> accessed on 25 March, 2022.

¹³ Arvind Narayanan, Joseph Bonneau, Edward Felten, Andrew Miller, and Steven Goldfeder, *Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction* (1st ed. Princeton University Press 2016).

¹⁴ Satoshi Nakamoto, 'Bitcoin: A Peer-to-Peer Electronic Cash System' (Bitcoin 2008) <<https://bitcoin.org/bitcoin.pdf>> accessed 25 March, 2022.

as it uses asymmetric cryptographic keys.¹⁵ This federated ledger is sustained and supported by the public in the form of various nodes which do not need the assistance of any other centralized agency. The technology is immutable in the sense that any data which is sent to the blockchain server cannot be changed unilaterally by a single participant without being noticed. To change the data or any transaction in the blockchain server it needs the permission of all the existing participants due to this reason it is extremely helpful in storing different type of data like number of coins, name of parties, transaction size, unique codes etc.¹⁶

Let us understand the blockchain concept with an example. Mr. X needs to send some amount to Mr. Y. In the traditional system, first X will send the request to the bank for initiating the transaction. Bank first checks X account for the given amount and credentials. If account is verified and finds correct, given amount gets transferred to Mr. Y. Many issues have come on surface while using this traditional process in the form of intervention by the centralized party like bank, increase in cost as it is not a cheap process, wastage of time etc.

Blockchain Technology coined into the presence of resolving these issues with the support of a block. If this transaction is initiated over the Internet and included in the block, the transaction is validated with the support of members of the network and the amount gets transferred to Mr. Y without any hurdles. Validated transactions cannot be altered in future.

Characteristics of BCT attracted different communities for exploring and building new applications in decentralized, distributed network. New solutions are proposed, whereas some applications are changed into blockchain from their traditional system.

All new technological innovations are almost always brought about by the need to solve a problem. The problem could be a new one that arose during the course of running a process or an existing problem left unresolved or partially resolved due to the limitations of existing technologies.

¹⁵ Michael Crosby, Nachiappan, Pradhan Pattanayak, Sanjeev Verma, Vignesh Kalyanaraman, 'BlockChain Technology Beyond Bitcoin' (Sutardja Center for Entrepreneurship & Technology Technical Report 16 October 2015) <<https://scet.berkeley.edu/wp-content/uploads/BlockchainPaper.pdf>> accessed 13 may 2022.

¹⁶ BP Singh and Anand Kumar Tripathi, 'Technology and Intellectual Property Rights' [2019] JIPR 41.

Blockchain technology is an innovative technology which have risen in an attempt to address the unpredictability which have existed in the commercial world since a long time. Though uncertainty could not be eliminated, it can certainly be lowered. Third-party institutions have long played the role of adjudicator/lawmakers between the parties making an agreement that lower the uncertainty or act as the bridge that covers the trust deficiency during a transaction. A good example would be an e-commerce transaction. The buyer expects fair goods/services that ensure value for his money. The seller expects to receive the agreed payment once he delivers the promised goods/services as per the agreement. Obviously, there would be a lack of trust or trust deficiency between the parties intending to enter into the agreement. Hence, a need for a third party arises, who in this case could be organizations like e-Bay/Amazon that provides the trust platform for both the parties. This mediating party assures the first and second party or the seller and buyer in this case assured legitimate trade. As noted earlier, the uncertainty or trust deficiency is not completely eliminated, as the mediating party has to be “trusted.” Trusting an institution however requires a lot of research and knowledge. Blockchain aimed to overcome this uncertainty by implementing the applications in a secure and decentralized way, thereby providing an assurance better certainty. BCT is gaining more and more acceptance and adoption, in the trustless society, precisely due to this reason.¹⁷

2.1.1. Elements of Blockchain Technology

To keep up with the complex working and functioning of blockchain technology it is necessary to have some understanding of various elements of blockchain technology

2.1.1.1 Block

As the name suggests blockchain technology is a technology which function using various block which in turn forms a chain. The most fundamental component of the blockchain technology is a block. When a node initiates a transaction through a node, a block gets

¹⁷ Altmann Peter, '(How) Can blockchain technology enhance trust?' (ResearchGate March 2019) <https://www.researchgate.net/publication/332072308_How_Can_blockchain_technology_enhance_trust> accessed 13 may 2022.

listed on the blockchain server.¹⁸ The chain in a blockchain server is made up of number of blocks. Also, if we see the anatomy of a block it is consist of block body and block header.¹⁹

Block body contain within itself the details of various transaction. the number of transactions in a block depends on the size of the various transaction initiated by the node and Block size. The body of the block also consist a list within itself of valid and authenticated transactions which have been sent to the blockchain server. A Block body can contain within itself many different types of data which is based on nature of the blockchain. A Non – Fungible Token blockchain for instance store all the detail relating to the parties to the transaction along with the detail of token which is being transferred along with the link to the underlying asset.²⁰

Block header stores set of data that gives information about the block and body which stores all the information about the block.²¹ This metadata comprises of version of Block, Hash of previous block, Time Stamp, Primary hash of that block and Nonce. Version of a block specify the validation rules to be followed in the network. Timestamp refers the current date and time period of the transaction. The nonce value is a 32bit whole number which is used by the various nodes to solve the hash problem.²² The Blockchain is connected by the various block where each block contains the hash number of the previous

¹⁸ Dylan Yaga, Peter Mell, Nik Roby and Karen Scarfone, 'Blockchain Technology Overview' (National Institute of Standards and Technology Internal Report, 24 October, 2018) <https://www.researchgate.net/publication/334048606_Blockchain_Technology_Overview> accessed on 25 March, 2022.

¹⁹ Gaoying Cui, Kun Shi, Yuchen Qin, Lin Liu, Bing Qi and Bin Li, 'Application of block chain in multi-level demand response reliable mechanism' (3rd International Conference on Information Management (ICIM) China April 2017).

²⁰ Dylan Yaga, Peter Mell, Nik Roby and Karen Scarfone, 'Blockchain Technology Overview' (National Institute of Standards and Technology Internal Report, 24 October, 2018) <https://www.researchgate.net/publication/334048606_Blockchain_Technology_Overview> accessed on 25 March, 2022.

²¹ Gaoying Cui, Kun Shi, Yuchen Qin, Lin Liu, Bing Qi and Bin Li, 'Application of block chain in multi-level demand response reliable mechanism' (3rd International Conference on Information Management China April 2017).

²² *ibid* 47.

block, thus forming the chain.²³ The first block does not consist hash digest of any previous block as there is no previous block, this first block is known as Genesis block.²⁴ If a block which is listed on the blockchain were to change, it would create a different hash for that block which would then make all the upcoming blocks to consists the new hash digest since they all includes within themselves the hash digest of the previous block. This would thereby make it easy to spot and exclude the tampered block.

2.1.1.2. Cryptographic Hash Functions.

A very important element of the blockchain technology is cryptographic hash functions which can be used in various ways. Cryptography is a technique for protecting information through the use of encrypting and decrypting the data and Hashing is a technique where cryptographic hash function is applied to an input, which compute a unique output called digest specific to each input.²⁵ This hash function does not concern itself with the size or type of the input. The cryptographic hash function can be applied to images, file, text, etc. This technique allows people to take input and apply the hash function to it and obtain the same output again to prove that the data is not tampered. A slight change in an input can being about a huge change in the hash digest (i.e., reducing the size of the input by one bit). The 32-bit whole number which is also known as Nonce could be used with the digest and to derive dissimilar hash outputs. The Nonce is used only for a single time.²⁶

2.1.1.3. Mining

²³ Simanta Shekhar Sarmah, 'Understanding Blockchain Technology' (Researchgate August 2018) <https://www.researchgate.net/publication/336130918_Understanding_Blockchain_Technology> accessed 13 may 2022.

²⁴ Dylan Yaga, Peter Mell, Nik Roby and Karen Scarfone, 'Blockchain Technology Overview' (National Institute of Standards and Technology Internal Report, 24 October, 2018) <https://www.researchgate.net/publication/334048606_Blockchain_Technology_Overview> accessed on 25 March, 2022.

²⁵ Mohamed Barakat, Christian Eder, Timo Hanke, 'An Introduction to Cryptography' (Cryptography 20 September 2018) <<https://www.mathematik.uni-kl.de/~ederc/download/Cryptography.pdf>> accessed 24 may 2022.

²⁶ Dylan Yaga, Peter Mell, Nik Roby and Karen Scarfone, 'Blockchain Technology Overview' (National Institute of Standards and Technology Internal Report, 24 October, 2018) <https://www.researchgate.net/publication/334048606_Blockchain_Technology_Overview> accessed on 25 March, 2022.

Mining a block is not an easy task be it small chain or large chain. The process of creating new block on a chain by miners is known as mining. As explained, every block contains within itself a nonce and a unique hash along with hash of the previous block. Extremely powerful softwares are used by miners to find a nonce which could solve the incredibly complicated math's puzzle that could obtain hash which could be accepted by the blockchain network.²⁷ The software tries to find the nonce and not the hash due to the reason that the nonce is only 32 bits and the hash is 256, almost 4 billion hash-nonce combination has to be checked before finding the golden nonce which could solve the hash puzzle. And when the golden nonce is obtained, the block get added to the blockchain network²⁸

As explained earlier, remining is required to make an alteration in any block of the chain and not only to that specific block but also the not just the block with the change, but also to all the subsequent block coming after the altered block in the blockchain. Due to this very fact it is very hard to tamper with the blocks in the blockchain. It is just a safety precaution since it is very difficult to find the golden nonce. This mining of golden nonce demands many hours of calculating by the software. So, after the nonce of a block is obtained, the block gets listed on the blockchain and by this way miner earn money.

2.1.1.4. Nodes

Another major element of the blockchain network is that they don't have any centralized server due to this the it could be said that the blockchain is owned by the public. Due to this reason, it is a federated ledger which are connected through various nodes in the blockchain. These nodes are basically any electronic device that can store within itself the copies of the chain and maintain the server operations.²⁹

²⁷ Simanta Shekhar Sarmah, 'Understanding Blockchain Technology' (Researchgate August 2018) <https://www.researchgate.net/publication/336130918_Understanding_Blockchain_Technology> accessed 13 may 2022.

²⁸ Gaoying Cui, Kun Shi, Yuchen Qin, Lin Liu, Bing Qi and Bin Li, 'Application of block chain in multi-level demand response reliable mechanism' (3rd International Conference on Information Management (ICIM) China April 2017).

²⁹ Zibin Zheng, & Shaoan Xie, Hong-Ning Dai, Xiangping Chen & Hua imin Wang, 'An Overview of Blockchain Technology: Architecture, Consensus, and Future Trends' (6th IEEE International Congress on Big Data June 2017).

And as each node stores a copy of the chain and the new block which is minted has to be accepted by all the nodes to make the chain more reliable. The decentralization of the network through the various nodes makes the chain more trusted and each transaction can easily be updated and approved. The transactions made by each node could be viewed by them on their wallet.³⁰

Making these transactions public and integrating them with an approving system through the nodes makes the chain more trusted, reliable and verifiable. Elementally, blockchain technology could be seen as medium of trust and reliability.

2.1.1.5. Smart Contracts

Though the Smart Contracts are not an essential component of blockchain technology but embedding it in the blockchain could open doors for many innovations. These Smart Contracts are basically softwares where agreements between the parties are written down.³¹ In other words, the terms of the contract which are agreed by the parties are incorporated into the codes to make the execution of these contracts by themselves.³²

The term ‘Smart Contract’ was originated around the year 1995 when Nick Szabo, a computer scientist, defines Smart Contracts as “a computerized transaction protocol that executes the terms of a contract. The general objectives of smart contract design are to satisfy common contractual conditions (such as payment terms, liens, confidentiality, and even enforcement), minimize exceptions both malicious and accidental, and minimize the need for trusted intermediaries.”³³

One of the most fundamental purposes of the smart contracts is make the contracts self-executing. The software embedded within itself the clauses of the contractual obligations and where all the requirements have been met and all the criteria are being fulfilled like

³⁰ Ibid.

³¹ Gönenç Gürkaynak, İlay Yılmaz, Burak Yesilaltay, Berk Bengi, ‘Intellectual property law and practice in the blockchain realm’ [34] 2018 CLSR <<https://www.gurkaynak.av.tr/docs/8c65a-ip-law-and-practice-in-the-blockchain-realm.pdf>> accessed on 25 March, 2018.

³² Ibid.

³³ Massimo Franceschet, ‘Blockchain, a gentle introduction’ <<http://users.dimi.uniud.it/~massimo.franceschet/teaching/superiore/blockchain/presentation.html#1>> accessed on 25 March, 2022.

registering the Intellectual property, property agreements etc. Then the execution by the smart contracts could be initiated to perform the contractual obligations, assigning of a property right or selling of the property or transferring of money.³⁴ Embedding of smart contract makes the parties to the contract capable enough to execute the terms of the contract in case of breach of obligation without the help of any third party like bank, insurance etc. Smart contracts are basically useful when the parties do not trust each other in the execution of contractual obligation in that case smart contract ensure the enforcing the terms of the contract. Thus, both the parties to the contract could put their faith on smart contract and thereby bring stability and reliability on the blockchain network.³⁵ when the contractual obligations are agreed by the parties to the contract, a smart contract could be formed where the terms of the contracts are incorporated into the codes, which is initiated by verified transactions on the blockchain network. Once any of the clause of the contracts got activated then the smart contract can begin with the self-execution of the contract, and this execution of contract cannot be stopped except under the circumstances that the terms of the contract mention any mechanisms within those clauses to terminate the contract.³⁶

2.1.2. Blockchain Technology – Working and Functioning

The structure of the blockchain technology is primarily sub-divided into 3 layers which are Applications, Decentralized Ledger and Peer-to-Peer Network. Applications is the top layer of the network which is followed by the Decentralized Ledger and the bottom layer is the Peer-to-Peer Network.³⁷

The first layer is the application layer which consist of the wallet application based on the blockchain technology. This application software provides an easy and simplistic user

³⁴ Zibin Zheng, Shaoan Xie, Hong-Ning Dai, Weili Chen, Xiangping Chen, Jian Weng, Muhammad Imran, 'An Overview on Smart Contracts: Challenges, Advances and Platforms' (Arxiv 22 December 2019) <<https://arxiv.org/pdf/1912.10370.pdf>> accessed 14 may 2022.

³⁵ Gönenç Gürkaynak, İlay Yılmaz, Burak Yesilaltay, Berk Bengi, 'Intellectual property law and practice in the blockchain realm' [34] 2018 CLSR < <https://www.gurkaynak.av.tr/docs/8c65a-ip-law-and-practice-in-the-blockchain-realm.pdf>> accessed on 25 March, 2018.

³⁶ Zibin Zheng, Shaoan Xie, Hong-Ning Dai, Weili Chen, Xiangping Chen, Jian Weng, Muhammad Imran, 'An Overview on Smart Contracts: Challenges, Advances and Platforms' (Arxiv 22 December 2019) <<https://arxiv.org/pdf/1912.10370.pdf>> accessed 14 may 2022.

³⁷ Simanta Shekhar Sarmah, 'Understanding Blockchain Technology' [8] 2018 CSE <https://www.researchgate.net/publication/336130918_Understanding_Blockchain_Technology> accessed on 25 March, 2022.

interface to the party using the blockchain technology for maintaining the digital assets. These application softwares can be downloaded on any electronic device be it smartphones, tablets, laptop etc. or can be use from any intermediary websites. For example, cryptocurrency wallet application uses the asymmetric-key cryptography technology which uses a pair of keys to enable the application user to maintain the cryptocurrency. The application layer helps the user to understand the complicated working of the blockchain technology by the means of simple understandable where the users can perform their day-to-day task based on the blockchain technology.

The asymmetric-key cryptography which is used in the application software consist a set of keys: where each pair contains a private and a public key where both the keys are mutually compatible. As the name suggest the public key is available to all the nodes and the private key is kept with the users secretly by which the data remain secure by having a cryptographic protection. The fact that both the keys are related to each other, does not mean that the private key can be determined by using the public key. When the transactions are 'digitally signed' it means that the private key has been used for encrypting the transaction so that any person with the public key could decrypt the transaction. This would mean that the person who is putting his e-signature of the transaction have the possession of the private key as the other key is public. Or the public key could be used for encrypting the transaction which could only be decrypted by the user's private key. The asymmetric-key cryptography technology uses a technique which develop trust between the parties who don't have any idea about each other by providing a technological tool to maintain trust and reliability in the transaction while at the same time publish the transaction on the blockchain network so that it could be viewed by anyone.³⁸

The second layer of the blockchain structure is the federated ledger which enables the users to have a tamperproof public ledger. On this second layer, the transactions are put into different blocks which are attached to each other by using the cryptography technique as every block contains the hash digest of the previous block, this would ensure the

³⁸ C. Komalavalli, Deepika Saxena and ChetnaLaroija, 'Overview of Blockchain Technology Concepts' in Saravanan Krishnan, Valentina Emilia Balas, Julie Golden, Y. Harold Robinson, S. Balaji and Raghvendra Kumar (eds), *Handbook of Research on Blockchain Technology* (Academic Press 2020).

tamperproof nature of the blockchain. Transactions in the block consists of the amount of cryptocurrency transferred between the users which thereby get verified by each node using their hash digest to ensure that the transaction is valid. To determine whether a transaction is valid or not the blockchain apply a proof-of-work algorithm which would thereby verify the authenticity of the transaction by the efforts of the various nodes present in the blockchain.³⁹

Generally, ledger is defined as a book where the financial accounts of a business is recorded. In offline world, ledgers have been used from a long time to maintain the accounts of various parties of the transaction. As the technology developed, the conventional ledger was replaced by the online ledger to store the transaction details, in centralized server owned by a third party which help the users to use this service through them. Sometimes these third party execute these ledgers in a federated manner. Nowadays there is a huge demand as well as need for the ledger whose ownership is divided among the public. This need and demand of the society is fulfilled by the blockchain technology which provide both a distributed network structure and a public ownership. The physical structure of blockchain networks which is distributed among the various nodes would require heavy duty computer system to centrally manage the distributed system of networks. This increase in demand for public ledgers has arisen due to the various challenges which are faced due to the centralized third-party ownership of the ledger such as issue related to security, stability, etc.

Peer-to-Peer Network is the bottom layer or the last layer of the blockchain structure. It is the layer where information is transferred in a blockchain network through the various nodes. These nodes have many different roles from exchanging information to maintain the server. No structure apart from the general physical structure is needed to maintain this P2P network by the nodes.

The various node on the blockchain uses asymmetric key cryptography technique in which both the public and the private key is used to obtain a digital signature. This signature which provides security to the blockchain network is one of the significant elements of the

³⁹ *ibid.*

blockchain technology. In the domain of tokens, this ‘digital signature’ is the primary tool to maintain and authorizes the transaction on the blockchain wallet.

This digital signature which is formed by the asymmetric key cryptography is combined with the P2P network and act as tool of various nodes on the blockchain to use the proof of work algorithm to reach the consensus and thereby verify the transaction. When a node authorizes a transaction by the use of digital signature, it uses the proof of work algorithm on the P2P network, to verify the transaction and get that transaction publish on the blockchain. So, it could be said that the nodes use the asymmetric key cryptography technique to carry out various different task on the P2P network.⁴⁰

As the Non- Fungible Tokens run on the blockchain network, it contains within itself all the unique qualities of all the components of the blockchain technology for instance, the NFT uses the cryptographic hash function to verify the reliability of a transaction, it uses the asymmetric keys cryptography to maintain trust and reliability in the transaction along with using the automated self-executing feature of the smart contract and also to reduce the user reliability on centralized server as they could easily become the target for hackers NFT uses the distributed ledger. By this way transaction of the NFTs are published on the public ledger which is distributed on the Peer-to-Peer network.

2.1.3. Concept of Tokens

As discussed above, A blockchain is a peer-to-peer network which consist of a federated ledger, which keeps immutable details of the transactions which are in public domain by affixing the data in an unchangeable record.⁴¹ The basic technology supporting Distributed Ledger Technology is public, so that means it is open for general public to make and maintain their own blockchain or can use an existing blockchain. Due to this reason, there are a number of blockchains which are supported by various different servers for recording the data like Ethereum, Bitcoin, IBM, etc.

⁴⁰ Dylan Yaga, Peter Mell, Nik Roby and Karen Scarfone, ‘Blockchain Technology Overview’ (National Institute of Standards and Technology Internal Report, 24 October, 2018) <https://www.researchgate.net/publication/334048606_Blockchain_Technology_Overview> accessed on 25 March, 2022.

⁴¹ Emmanuelle Ganne, Can Blockchain revolutionize international trade? (1st ed, WTO Publications, 2018).

There are many different aspects of distributed ledger technology and one of the most important aspect is the exchange of tokens which represent different assets in which these tokens represent some alpha numeric value which are listed on the blockchain network. There are various types of tokens which are used to represent any tangible object for instance coins, artistic work, assets, etc. Fundamentally, token which is used in the distributed ledger technology are just some unique programmable codes, which represent a real-life asset by the use of encryption.⁴²

There can be many different types of token standards which would be discuss in the later section. Ethereum is one of the most popular blockchain platform and it uses ERC 20 token standard.⁴³ The ERC-20 stands for Ethereum Request for Comments 20. IN 2015 Fabian Vogelsteller suggested this as a token standard where this Token Standard executes an application programming interface in the smart contract.⁴⁴

This ERC contract 20 sets out a standard for fungible tokens, Basically, Fungible tokens means the tokens each token has identical features as another, and therefore every token of this type are an identical copy of each other and can be easily replaced with each other.⁴⁵ So, the closest representation of the fungible token in real world is cash because a 100 Rupees note is identical to any other 100 Rupees note. And the value of both the notes are same. Unlike Fungible tokens, In NFT a unique token standard is used which is named as ERC-721.⁴⁶ An NFT can represent almost anything from legal records of asset ownership to artworks or from lottery tickets to collectibles.

An NFT is a unique type of a token that has established beyond doubt the uniqueness of the asset and where this token cannot be replaced with another token representing the same

⁴² Yan Chen, Blockchain tokens and the potential democratization of entrepreneurship and innovation (2018) 61 Elsevier
<https://web.stevens.edu/ses/documents/fileadmin/documents/pdf/Blockchain_Tokens_and_the_Potential_Democratization_of_Entrepreneurship_and_Innovation.pdf> accessed 27 March 2022.

⁴³ <<https://ethereum.org/en/developers/docs/standards/tokens/erc-20/>> accessed 24 March 2022.

⁴⁴ Pratima Shama, Rajni Jindal, Malaya & Dutta Borah 'A review of smart contract-based platforms, applications, and challenges' (2021) Springer
<https://www.researchgate.net/publication/357850224_A_review_of_smart_contract_based_platforms_applications_and_challenges> accessed 14 may 2022.

⁴⁵ <<https://ethereum.org/en/developers/docs/standards/tokens/erc-20/>> accessed 24 March 2022.

⁴⁶ <<https://ethereum.org/en/developers/docs/standards/tokens/erc-721/>> accessed 24 March 2022.

asset.⁴⁷ Due to this reason, it is known as “Non-Fungible Token”. These tokens are basically virtual receipt of the proprietary rights over an asset. Digital artworks are the most common asset which are being represented as an NFTs. Nonetheless, NFT can represent almost everything from tangible assets to intangible assets, from digital assets to physical one.

2.2. Working Principle of Non-Fungible Tokens

As already explained, each block in a blockchain has limited space. So, whenever the storage space of that block got filled by the transactions a new block would be minted which contains hash of the previous block and stores the subsequent transactions. By this way all these blocks will be linked back to the first original block which is the genesis block. All this data which has been stored in these blocks will have permanence as they are stored separately with each node.⁴⁸

Non-Fungible Tokens are fundamentally based on blockchain technology. Every minting and selling of an NFT confirms a transaction which thereby invokes the smart contract. The confirmation of a transaction represents that all the metadata and ownership details which is contained by the NFT got listed on the block which ensures that the information become immutable and the ownership is authenticated.⁴⁹

There are many complicated topics in relation to NFT and one of them is tokenization of assets and it is very essential for the researcher to provide a detailed understanding as it would be significant for the later analysis. As there are many ways in which one can mint a work. One of the way a user can turn a work into a Non – Fungible Token is by installing an ERC721 standard contract in any electronic device or individuals can just use the readymade tools made for minting a work. By this way a file gets represented by the NFT. After that a person can merge this NFT with a smart contract to produce metadata which

⁴⁷ V Barda, ‘ERC-721 Non-Fungible Token Standard’ (Ethereum Blog, 6 June 2021). Available at <https://ethereum.org/en/developers/docs/standards/tokens/erc-721/> (accessed 14 May 2022).

⁴⁸ Gönenç Gürkaynak, İlay Yılmaz, Burak Yesilaltay, Berk Bengi ‘Intellectual property law and practice in the blockchain realm’ [34] 2018 CLSR < <https://www.gurkaynak.av.tr/docs/8c65a-ip-law-and-practice-in-the-blockchain-realm.pdf> > accessed on 25 March, 2018.

⁴⁹ Mitchell Clark, ‘NFTs, explained’ (The Verge 18 August, 2021) <<https://www.theverge.com/22310188/nft-explainer-what-is-blockchain-crypto-art-faq>> accessed 24 March 2022.

are then added to the blockchain platform.⁵⁰ This metadata uses NFT token standard which are reliable and verified so that other parties can use these standards as reference to check the validity of any NFT. And as this metadata has information which is attached with a digital version of that work along with a set of keys and accounts, the token is said to be a representation of the original work.⁵¹

This manufactured NFT consist of programming code which contains all the information regarding the NFT and is added to the blockchain network. The resulting NFT is a piece of code that is written into the blockchain that contains various bits of information. There are various elements which are present in an NFT some of them are intrinsic while others are optional. One of the core elements which is intrinsic to the NFT is an identification numeral known as Token ID, which is created at the time of NFT creation.⁵² Another fundamental element of an NFT is the Contract Address.⁵³ This Contract Address is basically the blockchain location. The combination of these two elements of the NFT makes it unique and one of a kind. There can only be a single NFT with a combination of specific Token ID and Contract address. Primarily the uniqueness of an NFT lies in these two elements.⁵⁴

“One of the misconceptions attached with the NFT is that it is the digital version of the underlying asset. But this is not the case, the digital version of the asset is not considered a part of NFT apart from the fact that there is a link attached to the NFT that directs to this digital version. not the NFT, and it is not a part of the NFT other than by the presence of a URL that directs to the image.⁵⁵ This aspect of NFT would be discuss again in the later section. For now, it must be understood that the digital version of the asset was just used as a base for the NFT and due to which the NFT is uniquely linked to the digital version of the asset. So, it must be stressed that the NFT is not the digital version of the underlying asset but the metadata which is written on the blockchain.

⁵⁰ A Coathup, ‘Create an NFT and Deploy to a Public Testnet, Using Truffle’ (OpenZeppelin Blog, 1 March 2021) <<https://bit.ly/3fQjmFy>> (accessed 14 May 2022).

⁵¹ Andres Gadamuz, ‘The treachery of images: non-fungible tokens and copyright’ [2021] JIPLP 1.

⁵² <<https://ethereum.org/en/developers/docs/standards/tokens/erc-721/>> accessed 25 March 2022.

⁵³ *ibid.*

⁵⁴ V Barda, ‘ERC-721 Non-Fungible Token Standard’ (Ethereum Blog, 6 June 2021) <<https://ethereum.org/en/developers/docs/standards/tokens/erc-721/>> accessed 14 May 2022.

⁵⁵ Commission, The European Union Blockchain Observatory & Forum ‘Demystifying Non-Fungible Tokens (NFTs)’ (A Thematic Report) 2022.

Considering all these factors, it is emphasized that minting in regards to NFT means that a minter takes a digital version of the asset and uses that to create a Token Id which is unique to the Token and store that on the blockchain in the form of a smart contract which uses the ERC-721 contract standard. The storing of an asset on the blockchain require a private digital signature which belongs to the minter exclusively. using the ERC-721 standard, and this is done using a unique digital signature that belongs only to the person minting it. All these factors combinedly which bring the uniqueness factor in an NFT provides the scarcity value of an NFT. It is also stressed that multiple NFT could be minted of a single underlying work.

So, when a purchaser buys an NFT, they are not buying the digital copy of the asset but just purchasing the metadata which exist on the blockchain. It is this metadata which is being transferred from the minter to the buyer. When someone is purchasing an NFT, they are purchasing the metadata file and, as an NFT, this is transferrable as well. Due to these complexities some people have a misconception that the NFT is just like a signed copy of an asset which is not correct as NFT is not the digital copy but it is more like a signed certificate of that asset where the ownership lies on the certificate rather than the asset.”

There are various kinds of NFTs out of which NFT as a metadata file encoded with a digital copy of an asset is the most popular. In this kind the corresponding work is stored off chain and thus, these types of work are also known as off-chain works.⁵⁶ The second kind on the list is the NFT where not only the metadata is added to the blockchain but the entire asset gets added on the blockchain. These assets are the real blockchain indigenous assets. The other name for this type of NFT is on-chain NFT.⁵⁷ These specific types of NFTs can only be traded on the blockchain network and where the ownership of the NFT works like the ownership of the asset itself.⁵⁸ However, this kind of NFT is less popular compare to the former as the monetary cost for uploading an asset in entirety is very expensive due to the fact that the cost includes the miner’s fees for mining the work and uploading an asset on blockchain. In various marketplace this fee is referred to as gas fee. This gas fee is highly

⁵⁶ Kate Hertz, 'Know the Difference: On-Chain and Off-Chain NFTs' (one37pm 30 September 2021) <<https://www.one37pm.com/nft/tech/on-chain-and-off-chain-nfts>> 25 March 2022.

⁵⁷ *ibid.*

⁵⁸ <<https://avastars.io/>> accessed 14 May 2022.

dynamic and changes on daily basis.⁵⁹ Currently the gas fee is around 15 dollars per kilobyte.⁶⁰

Due to such a high gas fee, creators prefer to make NFT as metadata files so that the size of the NFT is considerably less and store the digital copy off chain on the marketplace itself or on an online file storage which is blockchain compatible like IPFS.

2.2.1. NFT Token Standards

Smart contract standards describe various directives which are applicable to different smart contract structure. The standards are the rules which are present in the application-level of the blockchains which supports smart contracts.⁶¹ These standards include many different items such as general terms, token standards, name of the registries, format type, etc. These standards should be followed by all the smart contracts to perform their function efficiently which includes minting an NFT, regulating the transactions, selling of NFT etc. Another essential reason for which smart contract standards are used is that they define rules which help in working with the blockchain network and provides a mechanism for efficient communication between different smart contracts. For those blockchains network which supports smart contract, these standards become a tool which enable people to create and trade with different types of tokens.

Fundamentally, there are three primary types of token standards which are, ERC-721, ERC-20 and ERC-1155. The nature of any token primarily depends on these token standards.⁶²

The most popular of these three token standards is the ERC-20 token standard which introduces the standard for fungible tokens which get uploaded on the Ethereum blockchain

⁵⁹ Qin Wang, Rujia Li, Qi Wang and Shiping Chen ' Non-Fungible Token (NFT): Overview, Evaluation, Opportunities and Challenges' (Researchgate May2021) https://www.researchgate.net/publication/351656444_NonFungible_Token_NFT_Overview_Evaluation_Opportunities_and_Challenges.

⁶⁰ <<https://ethgasstation.info/>> accessed 3 May 2022.

⁶¹ Monika Di Angelo, Gernot Salzer 'Tokens, Types, and Standards: Identification and Utilization in Ethereum' (International Conference on Decentralized Applications and Infrastructures, Oxford 2020).

⁶² Qin Wang, Rujia Li, Qi Wang & Shiping Chen ' Non-Fungible Token (NFT): Overview, Evaluation, Opportunities and Challenges' (Arxiv 25 October 2021) <<https://arxiv.org/pdf/2105.07447.pdf>> accessed 14 May 2022.

after fulfilling all the conditions.⁶³ This means this standard creates tokens which are identical in nature in features as well as value. A lot of Defi application creates cryptocurrency based on these token standards such as Bitcoin, Altcoin, Litecoin, etc. Due to these standards each individual cryptocurrency is same as another one in terms of nature and value. on the other hand, ERC-721 token standard introduces a standard for non-fungible token which represent a unique digital asset in contrast to fungible tokens.⁶⁴ So, a single non- fungible token would be different from another non-fungible token representing the same asset. As each NFT consist of a pair of two numbers Token Id and Contract address which are unique for each NFT as explained above.

The third type of token standard is ERC-1155 which is also known as Multi Token Standard.⁶⁵ This token is hybrid in nature as it can represent multiple numbers of fungible and non-fungible tokens. In previous standards, for very token be it ERC-721 or ERC-20 they need a separate contract for every token type this lay a lot of useless data on the blockchain.⁶⁶ For instance, a single game like Thetan arena creates a lot of token types which needs a separate contract for each token. This is not the case with ERC – 1155 which utilize the functionality of token Id by enabling each token id to represent a new token type which consist of a different metadata in relation to the previous token type.

2.2.2. Characteristics of Non-Fungible Tokens

Normally, there can be many unique qualities for NFTs as they can have many variations. therefore, it would be very difficult to account all these qualities here thus only the very innate characteristics of the NFTs are discussed below which are essential in understanding the concept of NFT such as: -

Unique: NFTs allow individual to make many tokens which represent a single asset with each token remain unique in themselves. For instance, 10,000 different tokens were issued by Bored Ape Yacht Club. In the coding language of the NFTs information are embedded which describe the properties of each asset in relation to their use for instance a digital art

⁶³ <<https://ethereum.org/en/developers/docs/standards/tokens/erc-20/>> accessed 24 March 2022.

⁶⁴ <<https://ethereum.org/en/developers/docs/standards/tokens/erc-721/>> accessed 25 March 2022.

⁶⁵ <<https://ethereum.org/en/developers/docs/standards/tokens/erc-1155/>> accessed 14 May 2022.

⁶⁶ Commission, The European Union Blockchain Observatory & Forum 'Demystifying Non-Fungible Tokens (NFTs)' (A Thematic Report) 2022.

NFT contain the information related to the size and pixels related information of the digital art, on the other hand an in-game collectible token contains details regarding the value of that collectible along with the use of that item in the game.⁶⁷

Ownership: NFTs comprise of some unique qualities related to ownership while dealing with the underlying asset such as Fragmented ownership, reliable transaction tracking and verified representation of ownership on the underlying asset.

Rare: An NFT can be rare in many ways from showing artificial rarity, quantity related rarity or a time related rarity.⁶⁸

Numerical rarity of an NFT depend on the number of copies of an asset which exists in the form of NFT. For instance, a sports personality launching 50 digital cards in respect to different player in a sports game as NFTs. So, those 50 digital cards that have the “digital signature” of the sports person could be owned in the game and will be rarer as they are limited in number in comparison to any in game collectible which are not limited. It is just same as owning a cricket bat in comparison to owning a cricket bat having an autograph by your favorite sports player.

Artificial rarity is indirectly related to numerical rarity as it refers to the rarity of an NFT due to the specific coding language which is incorporated to create a unique feature into the asset. To understand both artificial rarity and numerical rarity let’s see a real-life example, for instance, the popular NFT Cryptopunks out of the 10000 punks issued by them only 175 punks have a surgical mask on them. In contrast they issue around 2500 punks having earrings on them. Thus, we can see that surgical mask punks are rarer to the one with earrings as they are less in number even if there is not any substantial difference between them.

At last, it is historical rarity which means rarity due to any significant history of an NFT. Historical rarity can arise in many ways. For instance, the rarity in the Crptokitties NFT is due to the fact that they were one of the first NFT collectible ever launched in the market,

⁶⁷ Kendrick Lau, 'Non-Fungible Tokens A Brief Introduction and History' (Crypto June 2021) <https://assets.ctfassets.net/hfgyig42jimx/6A8K5H6VrTydTDuEFHXQ5P/3cca896ad77bd967859a7a1256a5a91f/Crypto.com_Macro_Report_-_Non-Fungible_Tokens.pdf> accessed 14 May 2022.

⁶⁸ *ibid.*

this was the historical significance attached to them. Moreover, since blockchains records within itself a verified account of the ownership of an NFT and the users can be tracked down by the use of distributed ledger technology, A rarity on an NFT could increase if the NFT was ever owned by any popular celebrity or imminent personality. Just like in offline world a cricket bat from which Virat Kohli had played in the past would be rarer in comparison to any other bat.

Programmability: The programmability characteristic of an NFT make it unique and different from the existing and conventional digital assets present in the market. Just like conventional digital assets which have smart contracts embedded in them NFT can represent any real-world asset. Additionally, NFTs could be coded in such a way as any software application could. For instance, an NFT can be coded in such a way that the artist could continue with their resale rights and get the royalties on the subsequent sale of the NFT in addition to the first sale. Also, many NFT minter argue that the NFT can also be programmed so that they could be use in decentralized finance application for example, lease, mortgage, etc.⁶⁹

Immutability: All the different types of tokens which are based on blockchain technology has one thing in common they all are immutable in nature which means that the tokens and all the data which it incorporates are tamperproof. Thus, can't be altered by any user unilaterally. Due to this very reason NFT provide authenticity and reliability.⁷⁰

2.2.3 Indicative Use Case of Non-Fungible Tokens

NFTs are very strong in the sense they can represent almost every real-world asset from tangible to intangible. Due to that reason, there can be various use case of NFT some of the prominent ones are discussed below to have a proper understanding of how NFT can be used.

2.2.3.1 Gaming Collectibles

⁶⁹ Dr. Burcu Sakız, Prof. Dr. Ayşen Hiç 'Blockchain Beyond Cryptocurrency: Non-Fungible Tokens' (International Conference on Eurasian Economies, Baku 2021).

⁷⁰ Commission, The European Union Blockchain Observatory & Forum 'Demystifying Non-Fungible Tokens (NFTs)' (A Thematic Report) 2022.

One of the most promising use cases of NFT are collectibles more specifically, gaming collectibles. These NFT based gaming collectibles are disrupting the gaming market with their unique qualities which they offer. Their virtual in-game collectibles are identical in essence to the physical collectibles which are used in various board games like monopoly and thus can open the doors for various opportunity in the virtual world. Though the digital collectibles are identical with physical collectibles they do have some unique advantageous characteristic which have make them quite popular for instance, they cannot degenerate like their physical counterparts and challenges related to the physical presence of the parties in a same place are removed.⁷¹

These NFT based gaming collectibles are very essential for the participants of the game due to many reasons. These digital items possess identical unique qualities for every player. To make these in game item unique some unique codes are put in the token of that item and published on the blockchain. Also, as these items are immutable, they cannot be destroyed without the permission of the player

There are various NFT based games present in the market such as The Sandbox, Defi kingdom, Cryptokitties, LiteBringer, Axie Infinity, Tree verse, etc. Lately, a modified version of these games is emerging in the gaming world which is the Play-to-earn games which allow the players to own their in-game assets along with increasing the value of those asset by playing the game. This play to earn technique are disrupting the gaming market by providing various opportunity to the player. These meta-assets can represent anything from cryptocurrency to digital collectibles.

2.2.3.2 Digital Art

Another popular area where NFTs are being used extensively is the digital art market. One of the primary reasons for the workability and practicability in the digital art industry is due to the fact that the digital art industry is not stable and fragmented into various parts.

Digital art industry has been totally disrupted by the use of NFTs. The unique qualities of all the components of the blockchain enable the NFT to make the digital art more authentic

⁷¹ Vidal-Tomás, David 'The new crypto niche: NFTs, play-to-earn, and metaverse tokens' (MPRA 2 January 2022) <https://mpra.ub.uni-muenchen.de/111351/1/MPRA_paper_111351.pdf> accessed 14 May 2022.

and could help in the provenance of ownership. As digital art is more susceptible to get copied and imitated than the conventional art, the digital art has not been able to realize its true potential. Due to this NFT come into picture to provide exclusivity in terms of ownership and provide immutability to the digital art. Conventional art are usually identical with their copy but NFT provide a tool to have unique copies of a single digital art due to the unique metadata present in the token. This unique metadata presents the quality of scarcity which thereby increases the value of the digital art. NFT remove all the challenges which the artist faced from copying of the digital art by having the work minted on the blockchain. New marketplaces are emerging nowadays in addition to the conventional marketplace which are connecting digital artist to potential buyers. By this way NFTs enable digital artists to earn revenue from their arts and defend their IP rights.⁷²

2.2.3.3. Musical Royalties

Just like any video file or images can be represented, audio file can also be represented in the form of NFT to enable buyers to own a unique work of music. NFTs also enable the artist to get royalties on the resale copies of the work and to provide them novel experimental applications in the form of production crowdfunding. NFT also provide assistance to the streaming applications in tracking the monetization of work of a particular artist along with enabling the artist to freely circulate their work.⁷³

2.2.3.4. Supply chain

There are various challenges which the artist face due to copying of the work, one of those challenges is to provide a mechanism which enables the buyers to differentiate original product from the copy as a product represent the goodwill of a brand which could be very susceptible in the digital field due to the duplication of the product. This goodwill of the product carries a lot value for the artist. NFT helps in overcoming this challenge by becoming the authentication mechanism for the brand. An example for this would be Nike,

⁷² Wajihah Rehman, Hijab e Zainab, Jaweria Imran, Narmeen Bawany' NFTs: Applications and Challenges' (22nd International Arab Conference on Information Technology (ACIT)).

⁷³ David C. Eisman, Stuart D. Levi, Mana Ghaemmaghami, MacKinzie M. Neal & Theo Sedlmayr, 'Nonfungible Tokens and the Music Industry: Legal Considerations' (2021) 41 The Licensing Journal <<https://www.skadden.com/-/media/files/publications/2021/05/nonfungible-tokens-and-the-music-industry-legal.pdf>> accessed 15 May 2022.

which has filed a patent application for a project name ‘Cryptokicks’ which is attached to each pair of shoes and prove the authenticity of the product.⁷⁴

Another challenge which a brand faces in implementation and organization of operation in a brand is related to the ownership of the product. Due to globalization the world has become a single market due to which the role of intermediaries has increased which make the tracking ownership task a tiresome process as it involves a lot of paperwork and parties. To solve this issue NFT uses a digital prototype of the product an example of that is cryptopunks⁷⁵ which along with proving the originality also track the ownership of the goods. By this way NFTs can be implemented in the supply chain sector.⁷⁶

⁷⁴ Matthew Beedham, ‘Nike now holds patent for blockchain-based sneakers called ‘CryptoKicks’’ (TNW 10 December 2019) <<https://thenextweb.com/news/nike-blockchain-sneakers-cryptokick-patent>> accessed 15 May 2022.

⁷⁵ Andrew Hayward, ‘Why Larva Labs Sold the CryptoPunks NFT IP to the Bored Ape Creators’ (Decrypt 14 March 2022) <<https://decrypt.co/94973/why-larva-labs-sold-the-cryptopunks-nft-ip-to-the-bored-ape-creators>> accessed 15 May 2022.

⁷⁶ Tal Elyashiv, ‘Non-Fungible Tokens for the Supply Chain’ (SDC Executive 5 January 2022) <<https://www.sdexec.com/software-technology/ai-ar/article/21915598/spice-vc-nonfungible-tokens-for-the-supply-chain>> accessed 15 May 2022.

Chapter -3

The Invisible Strings Attached: Non-Fungible Token and its Interplay with IPR

Long viewed as a complicated subject of calls and inquiries, virtual crypto assets such as Cryptocurrencies are slowly changing to more frequent topic of discussion among the General public. The rise of these virtual digital assets offers huge opportunities in the development of a country. Experts have said that the digital assets have tremendous potential in the next 10 years, due to their rapid adoption.

The most fascinating and discussed technology event of this decade has been the rise of NFT. Since the last few years, the world has noticed various unorthodox types of digital assets and virtual currencies which has entered the commercial market. But the most fascinating and discussed technology event of this decade has been the rise of Non-Fungible Tokens, which are the latest hype in the domain of distributed ledger technology. This breakthrough blockchain based technology have disrupted the virtual digital asset industry completely.

NFT was developed during the early years of this century. But they only get popular in the technological world when Dapper Labs, an NFT firm, announced to sell NFTs through a game which is linked to virtual breedable cats known as Crypto Kitties in 2017 and the general public went insane for these Crypto Kitties.⁷⁷ Since this date more than 2 crores Crypto Kitties has been sold by Dapper Labs. Not a long time ago NFTs has shook the art world with storm with sale of NFT based artwork at millions of dollars, as compared to fine art. The first NFT of Christie's – a "conventional" auction house has sold a popular piece by Beeple titled "Everydays: The First 5,000 Days" for a whopping sum of \$69 million.⁷⁸ Also, world's first tweet has been auctioned as an NFT by Twitter's CEO, Jack

⁷⁷ Tomio Geron, 'How Dapper Labs scored NBA crypto millions' (Protocol, 13 March, 2021) <<https://www.protocol.com/fintech/dapper-labs-nba-top-shots>> accessed 24 March, 2022.

⁷⁸ Abram Brown, 'Beeple NFT Sells For \$69.3 Million, Becoming Most-Expensive Ever' (Forbes 11 March, 2021) <<https://www.forbes.com/sites/abrambrown/2021/03/11/beeple-art-sells-for-693-million-becoming-most-expensive-nft-ever/?sh=7945f5992448>> accessed 24 March, 2022.

Dorsey named “just setting up my twttr”, which was sold for more than 2.9 million dollars⁷⁹ and a marketplace named NBA Top Shot which is owned by Dapper Labs has crossed the US\$500 million mark, which makes it the most successful NFT marketplace till this day.⁸⁰ This sudden rise of NFTs is not limited to the western countries but the effect of the rise of NFTs could be seen in India as well. Amitabh Bachchan has sold his NFT collection of movie poster and artwork resembling him for more than 7 crore Rupees.⁸¹ Also, Indian Cricket Team Captain Rohit Sharma has announced to launch his NFT collection.⁸² From December 2020 to February 2021, the sales of NFTs have increased by 20 times.⁸³ This significant rise in the popularity of NFT suggests that NFTs are a worth investing technological option for digital artist. And since the transaction related to NFT are tracked by distributed ledger technology, it enables the buyers to identify copied artwork from the original one which thereby exclude all the fraudulent transactions.

It is stated by Valuable, an IT company that “Owning any digital content can be a financial investment, hold sentimental value, and create a relationship between collector and creator. Like an autograph on a baseball card, the NFT itself is the creator’s autograph on the content, making it scarce, unique, and valuable.”

Nonetheless, with this rise in popularity, various challenges related to ownership, potential IP infringement and IP management issues emerges in relation to the underlying asset. And

⁷⁹ Isabelle Lee, ‘Twitter CEO Jack Dorsey’s first-ever tweet sold for \$2.9 million as an NFT’ (Business Insider 30 October, 2021) <[⁸⁰ Tomio Geron, ‘How Dapper Labs scored NBA crypto millions’ \(Protocol, 13 March, 2021\) <\[⁸¹ ‘Shubham Raj, ‘Amitabh Bachchan’s NFT collection sold for Rs 7.18 crore’ \\(The Economic Times 5 November, 2021\\) <\\[⁸² Jigyanshushri Mahanta, ‘Rohit Sharma Announces NFT Collection Inspired by Personal Memorabilia on FanCraze’ \\\(Republic World 25 December, 2021\\\) <\\\[⁸³ ‘NFT sales hit \\\\\$25 billion in 2021, but growth shows signs of slowing’ \\\\(The Economic Times 11 January 2022\\\\) <\\\\[32\\\\]\\\\(https://economictimes.indiatimes.com/tech/technology/nft-sales-hit-25-billion-in-2021-but-growth-shows-signs-of-slowng/articleshow/88822902.cms> accessed 26 March 2022.</p></div><div data-bbox=\\\\)\\\]\\\(https://www.republicworld.com/sports-news/cricket-news/rohit-sharma-announces-nft-collection-inspired-by-personal-memorabilia-onfancraze.html> accessed 24 March, 2022.</p></div><div data-bbox=\\\)\\]\\(https://economictimes.indiatimes.com/markets/cryptocurrency/amitabh-bachchans-nft-collection-auctioned-at-record-1-million/articleshow/87539323.cms?from=mdr> accessed 24 March, 2021.</p></div><div data-bbox=\\)\]\(https://www.protocol.com/fintech/dapper-labs-nba-top-shots> accessed 24 March, 2022.</p></div><div data-bbox=\)](https://www.businessinsider.in/stock-market/news/twitter-ceo-jack-dorseys-first-ever-tweet-sold-for-2-9-million-as-an-nft/articleshow/81639599.cms#:~:text=Twitter%20CEO%20Jack%20Dorsey%20has,and%20is%20based%20in%20Malaysia.> accessed 24 March, 2022.</p></div><div data-bbox=)

thus, it is necessary for the brands and artists who deal with NFTs to keep in mind the IPR related aspects in their marketing strategies.

Intellectual property is a type of property that involves creations of the human mind. There are various kinds of work which can be the creation of human mind like literary, artistic, dramatic work, logos, symbols, names, design etc.⁸⁴ This creation of human mind can be protected through various rights available in the IPR regime in the form of copyright, patent, trademark, Industrial design, etc. These rights are essential for the community as they provide motivation to artist to create more work and thus helps in the economy of a country. The copyright owner has the exclusive right to reproduce and sell that work.⁸⁵ Analogously, the patent holder has the exclusive right to use and transfer his rights in the form of license so that they can earn revenue form the invention.⁸⁶ Likewise, Trademarks helps the brands owner to protect their brand name from getting copied and maintain uniqueness in their brand name to protect their goodwill.⁸⁷ Thus, these protections are needed in one way or the another to the creator of the work in innovation and development.

NFTs can represent brand's trademark and logo by the process of tokenization. Also, NFT can represent literary or artistic work in the form of, books, movies, songs etc. Along with these there can be other instances as well where NFT is related with IP based work. As NFT and these works which are the creation of the human minds are closely connected. Due to this reason, there are various IP related legal implications on NFTs. Also, the owners of these goods will try to monetize from these assets, and in this process will sell the assets to another person which can tokenize this asset thus increases the chances of infringement. Thus, NFT raises various challenges in the field of intellectual property rights domain.

In spite of the fact that NFTs provides many opportunities to the digital artist in the monetization process of the assets, it brings many challenges in relation to certain aspects of copyright law such as ownership rights, infringement, IP protection, digital management

⁸⁴ Dr. Raghbir Singh, *Law Relating to Intellectual Property* (Volume 1, 3rd edition, Universal Law Publishing Co. 2014).

⁸⁵ William F. Patry, *Patry on Copyright*, (Volume 6, 1st edition, Thomson Reuters 2012).

⁸⁶ Janice M. Mueller, *Patent Law* (Walter Kluwer Law & Business 2013).

⁸⁷ K C Kailasam, Ramu Vedaraman, Anuradha Ramu, *Law of Trade Marks including Intemational Registration under Madrid Protocol & Geogpahical Indications* (4th edition, LexisNexis 2017).

etc. The primary reason for the emergence of these challenges is due to the confusion in the minds of the public concerning the rights and ownership aspect of NFTs.

To have a better understanding of the issues and concerns arising of the NFT it is firstly needed to have a discussion on the various cases which are being filed by the copyright owner of the underlying assets against the creators of NFTs.

3.1. Hermes International et al v. Rothschild⁸⁸

Hermès, a luxury design house which is based in France, has filed a complaint in the US district court against Mason Rothschild, a digital artist who has created an NFT named ‘Metabirkins’. MetaBirkins is a collection consisting of 100 virtual Birkin bag-inspired NFTs, which is being offered in variety of colors along with faux fur and some Metabirkins are even based on the artworks having the depiction of Van Gogh's Starry Night and Mona Lisa.

It was claimed by Hermes that Mason Rothschild’s “widespread use of the MetaBirkins mark constitutes trademark infringement and dilution,” as that “there can be no doubt” that the “success” of the MetaBirkins NFTs “arises from his confusing and dilutive use of Hermès’ famous trademarks.”

It was further claimed by Hermes that Mason Rothschild is “a digital speculator who is seeking to get rich quick by appropriating the brand MetaBirkins for use in creating, marketing, selling and facilitating the exchange of digital assets known as non-fungible tokens,” They also asserted that the use of the trademark ‘MetaBirkin in which Rothschild has added the word “meta” to the Hemes famous trademark “Birkin” has weaken the reputation and distinctive quality of the brand.

MetaBirkin NFTs were initially sold on NFT marketplace platform OpenSea. The first MetaBirkin NFT was sold on 3 December 2021 for \$42,000. Hermès notified both Rothschild and OpenSea on 16 December, saying that Rothschild blatantly violated its intellectual property. Hermès also said that selling of MetaBirkin would imply selling of fake Birkin handbag in the virtual world.

⁸⁸ *Hermes Int'l v. Rothschild*, 22-cv-384 (AJN) (S.D.N.Y. Feb. 10, 2022).

Marketplace OpenSea “agreed with Hermès” and removed the NFTs. However, Rothschild has “flatly refused to stop selling the MetaBirkins NFTs.” He is currently selling the Metabirkin NFTs on other NFT platforms, such as Rarible, Zora and LooksRare. The most expensive piece was priced at \$45,100 on Rarible, while the cheapest piece is available for 5.0 ETH on LooksRare.

Mason Rothschild responded against a cease-and-desist letter, which was sent to him by Hermes through an Instagram post. In the open letter, Rothschild stated that his work is protected by the First Amendment. He also wrote that as a fashion powerhouse, Hermès is supposed to utilize its power to help young artists.

Hermès responded to this claim. In the lawsuit, the brand stated that “NFT may reflect some artistic creativity [...], however, the title of ‘artist’ does not confer a license to use an equivalent to the famous BIRKIN trademark in a manner calculated to mislead consumers and undermine the ability of that mark to identify Hermès as the unique source of goods sold under the BIRKIN mark.”

According to the complaint, Digital artist Mason Rothschild’s MetaBirkins which are based on the popular Birkin bags of Hermes has misappropriate both the trademark logo and the word mark Birkin of Hermes and thus is liable for trademark infringement and trademark dilution.

If the defense of Mason Rothschild is completely based on the roger test which is found under the 1st amendment of the US Constitution, the US district court would have to create a balance between the right of Artist with the rights of trademark holder.

Crypto world and NFT is totally a new market for artists to sell their artworks and to apply a test which based on the offline market and conventional fine art could create a lot of problems for the courts. Thus, sufficient room should be left to the court to interpret the rights of digital artist and copyright holder.

Thus, there are various issues and concerns which arises out of NFT such as how NFT branding can end with a suit of trademark infringement and trademark dilution. This case of discuss some aspect of appropriation of trademark to bring branding of NFT under the

1st amendment. This case also shed lights on the liability of the marketplace while dealing with the NFTs.

3.2. Miramax, LLC v. Quentin Tarantino et al⁸⁹

Miramax, an American entertainment company, filed a lawsuit against Quentin Tarantino for announcing his plan of minting seven unseen scenes from his movie Pulp Fiction as NFTs. Quentin Tarantino also announced that he is planning to use his original handwritten script and secrets related to the filmmaking in these NFTs.

However, the company Miramax has argued that the screenplay rights and all the rights in the film belongs to Miramax and not Quentin Tarantino, and therefore filed a lawsuit against Tarantino for Copyright infringement, trademark infringement and breach of contract.

Miramax responded to this claim by stating that in 1993 Miramax and Tarantino got into a contract where the company got all the rights in the film while Tarantino kept with himself the limited “Reserved Rights.” In these “Reserved Rights” there is a clause where it is written that the right to print publication of the film is included within these reserved rights and these rights to print publication in the film is not limited to the general print publication but also includes screenplay publication.

Tarantino’s lawyer states in the court filing that selling of NFTs which are based on the screenplay of the film will be considered as the “screenplay publication” right. Miramax responded to this claim by stating that the selling of NFTs would be “a one-time transaction, which does not constitute publication.” Along with this Miramax mentioned that they were also planning to sell NFTs based on Pulp Fiction and the act of Tarantino would disable the company to avail these rights.

However, this argument by Miramax is extensively weak as the company is relying their arguments on the interpretation of the copyright law of US. According to the company, dealing in small number of copies with limited number of individuals would not constitute publication under the US copyright law unless there is no condition attached with the

⁸⁹ *Miramax, LLC v. Tarantino*, 2:21-cv-08979-FMO-JC (C.D. Cal. Mar. 10, 2022).

further dealing of the copies. And here, Tarantino is sharing the secrets relating to the screenplay of the film where the buyers have complete freedom to deal with the secrets as their wishes and thus have a way around Miramax arguments.

Consequently, it could be said that it is well within the rights of Tarantino to get the screenplay published in the form of NFTs as this publishing right is a part of reserved rights which belongs to Tarantino. And thus, it could be concluded that there is no breach of contract as no contractual clause is violated by Tarantino. Further in addition to this it could also be concluded that there is no violation of copyright as it is Tarantino's right to deal with the screenplay of the film and right to published them as it is the part of reserved rights which belongs to Tarantino and therefore there is no copyright infringement.

Now coming to the issue of trademark infringement, for constituting trademark infringement it has to be proved by Miramax that there is a likelihood of confusion in the minds of the public as to the source of Tarantino's NFTs and for proving that Miramax needs substantial number of people to have a mistaken belief that there is a connection between Tarantino's NFT and Miramax which would be very hard to prove due to various reasons.

Firstly, because despite the fact that Miramax has registered the name 'Pulp Fiction' for a number of products classes for instance, clothing, utensils, 3-D models, etc yet none of these categories could include NFTs under it. But this aspect of trademark registration would not completely destroy Miramax claims but it would definitely have some impact.

And secondly, Miramax would find it very hard to establish a connection between Tarantino's NFT and Miramax as prima facie it is unlikely that people would be confused as to the source of the NFTs. This argument is based on the fact the NFTs which are being sold by Quentin Tarantino are assigned a brand name of "Tarantino NFTs," which is primarily based on Quentin Tarantino's name and also with the fact the general public associates Pulp Fiction more with Quentin Tarantino who was the actor, writer and director of the film than Miramax which was the production company behind the film as it was Quentin Tarantino who was performing onscreen and have different role in the making of the film as compared to Miramax have the connection offscreen. Also, if after all this there exist a residual amount of confusion in the minds on the public it could be remove by

making a disclaimer regarding the NFTs on the webpage that these NFTs have no association with Miramax. Thus, there won't any trademark infringement on the NFTs.

From the above discussion it could be seen that there are various concerns for the artists and creators in relation to NFT such as What does minting of an NFT constitutes, does it means copying the work, or derivation of the work or transformation of the work. Also, how minting of an NFT could amount to copyright and trademark infringement.

3.3. Roc-A-Fella Records v. Dash⁹⁰

JAY-Z and Roc-A-Fella's attorney Alex Spiro filed a lawsuit against co-owner Dash, accusing the 50-year-old Hip Hop mogul of attempting to auction off Hov's 1996 debut Reasonable Doubt as an NFT without permission. But Dash refuted the claim and insisted that he tries to sell only his one-third share of the company.

Roc-A-Fella Records also stated that they accept the fact that Dash owns one-third ownership of the company but all the rights in the album belongs to Roc-A-Fella and thus, Dash is violating the rights of the records by auctioning the NFTs

Dash argued that he was just assigning his right of receiving royalties as he was entitled to those royalties due to the fact that he was the owner of one-third stake in the Records. And he had done no wrong by auctioning the assigning rights as an NFT because the assigning of once right on an album has been done by various artist from time to time to earn revenue and it is well within their right to do so

"Roc-A-Fella doesn't understand what's being minted, and it doesn't care what's being minted, and I don't think they understand what we're trying to do." his lawyer said.

On this the Records responded that it was extremely clear from the auction's announcement that the artist tries to "represents that he owns — and is selling — the copyright and rights to all future revenue generated by the album."

⁹⁰ *Roc-A-Fella Records, Inc. v. Dash*, 1:21-cv-05411-JPC (S.D.N.Y. Jul. 29, 2021).

The exact words were “SuperFarm is proud to announce, in collaboration with Damon Dash, the auction of Damon’s ownership of the copyright to Jay-Z’s first album ‘Reasonable Doubt’,”

"But Dash merely owns a 1/3 equity interest in RAF, Inc.; he does not own the copyright," the complaint said.

The case is not yet decided by the courts and in the latest development of the ongoing legal battle, the court put breaks on Dash’s effort and ordered him to not sell his ownership for the time being. Along with that, the judge also denied Dash when he asked for a restraining order against Jay and Roc-A-Fella which could restrain them from holding a shareholder meeting. As it was argued by Dash that Jay would try to alter the bylaws of the company to disable Dash from selling his claim on the company. The court additionally stated that Dash could however file an appeal against the decision of the shareholder’s meeting.

This case however shed lights on various challenges such as digital management of IP rights through NFT, ownership related aspects of NFT and the underlying asset, Resale rights or royalties related right from NFT, etc.

3.4. TamarindArt, LLC v. Husain et al.⁹¹

On Jan. 21, 2022, TamarindArt LLC, a collector and dealer of Indian art, sued the administrators of the estate of artist Maqbool Fida Husain for a declaration that Tamarind’s nonfungible token (NFT) project of Husain’s artwork didn’t infringe any of the estate’s rights. According to the complaint, in 2002, Tamarind purchased a 60-foot-long mural by the artist entitled *Lightning* (1975) for \$400,000 (per the complaint, the work was often called “the *Guernica* of India”). Recently, Tamarind launched a campaign to sell NFTs based on the artwork. In response, the estate sent Tamarind a cease-and-desist letter stating that Tamarind’s plans to sell NFTs based on the artwork would violate the estate’s copyright interests in the work.

Tamarind seeks a judicial ruling that its planned NFTs wouldn’t infringe any rights held by the estate. As per Tamarind, as part of the purchase, the artist signed a bill of sale,

⁹¹ *TamarindArt LLC v. Husain et al.*, No. 22-cv-595, complaint filed, (S.D.N.Y. Jan. 21, 2022).

granting Tamarind title to the work and an “exclusive, royalty free, worldwide license...to display, market, reproduce and resell all or any part of the artwork, including all intellectual property in respect thereof.” Tamarind also alleges that it and the artist signed a further agreement in 2003 in which the artist agreed “that all artworks already purchased or created for Tamarind/affiliates are considered copyright protected property of Tamarind or its affiliates,” which, per Tamarind, extinguished any residual rights the estate may have had in the artwork and made Tamarind the copyright owner of the work. The estate, for its part, hasn’t yet filed a response to the complaint.

The case raises questions about the rights to mint NFTs based on artwork. Ordinarily, under U.S. law, an artist retains the copyright in a work (which includes artist’s exclusive right to make copies of the work and distribution rights) after its sale, absent an agreement granting the purchaser a license or assignment of copyright. Here, the case will require the court to interpret and apply the agreements the parties are alleged to have signed to determine whether Tamarind has the necessary rights to mint.

Also, many other questions are also raised by this case related to NFT such as how minting an NFT could violate the moral right of the artists and how NFTs could get IP protection under the current IPR regime, etc.

Chapter- 4

Analyses of Issues and Concerns arising out of NFT and IPR

4.1. Copyright Implication of Non-Fungible Tokens

The discussion from the working on NFTs would make individuals to exclude copyright from their thoughts. As at its core NFTs are just metadata which are encoded with the digital copies of the work and get listed on the blockchain. However, it is uncertain whether this work would be eligible for copyright protection or not as most of these works are trademark logo of a brand or public domain works. As NFT can represent almost everything from tangible assets to intangible assets, from digital assets to physical one. The work which is represented is only needed in the first step to generate the Token ID and Contract address of the NFT. Basically, these underlying assets are very loosely connected to the NFTs.

Nonetheless, if we look closely there could be a little spark going around the NFTs from the copyright view angle due to various reasons like NFTs are mostly based on artwork and seen a digital art but primarily it is because of the misconception which the people have in relation to the NFTs ownership.

During the transfer of NFTs, the buyer of NFTs would only acquire possession of the tokenized version of the asset on which the link to the digital copy of that work is provided. These NFTs can be compared to the receipt of an asset which has been signed by using cryptography. Some clarification is needed before proceeding with the discussion firstly, proprietary right to the other copies of the asset is not conferred to the buyer of an NFT which is based on that asset, and secondly, the buyer only acquires the proprietary right on that particular tokenized version of the work and nothing else.

Since a long time, many creators are finding it extremely hard in monetizing their work as the digital artwork is immensely susceptible to copying and distribution by the copy pirates. This aspect of digital copy is not altered by NFTs, copy pirates are still copying and distributing the digital copies of the work which is minted as NFTs excluding the facts that there are various copyright implications attached to it. As an alternative, NFTs depict creator's right of claiming ownership in the underlying asset. The unique feature about this

is that it cannot be copied like the general digital copies of the work. By this way, A single NFT of an asset can be used as a tool which could bring ownership of the digital work more in consistency with the ownership of the asset and thus it will result in artificial scarcity.

4.1.1. Copyright Protection to Non-Fungible Tokens

From our discussion in the last chapters, one of the most confusing aspects of NFT is related to the copyright ownership of the asset which is represented by the NFT. Let's assume for the current analysis that the digital asset at hand can be protected under the Indian copyright Law: It is either a digital copy itself or a physical asset which is later converted into digital version to get minted into an NFT. This raises various issues related to ownership such as whether the selling an NFT would imply that the artist has transferred his copyright of the underlying art to the buyer of the NFT? Whether such trading and minting of NFT would amounts to distribution under the Indian Copyright Act? And if answers to these questions are yes, then whether such distribution of NFT would be amounts to resale share of original copies of the work and whether the distribution of NFTs would be subjected to the doctrine of doctrine of first sale.

As explained earlier, the ownership of an NFT can be compared to ownership of a collectible item like a card, for example an anime card or a sport card. Similarly, to collectible cards, NFTs are tokens which represent some underlying assets. When we buy an NFT no ownership in the underlying asset is transferred to the buy Just like when we buy a collectible card, no ownership on the underlying sports player or anime monsters are transferred. The primary reason for these confusions is the fact that in the present market NFT are being sold for millions of dollars around the world and if someone is paying this much amount then they are no buying just some metadata.

Nowadays, Media is also mistaken when media persons are reporting transactions related to NFT assuming that the original work has been sold by the artist when the fact is it is the NFT which is being sold. Reasonably, it is very hard to understand that why people are paying such high prices for NFTs which are just some strings of codes listed on a blockchain network which is unlikely to have some artistic relevance.

Directing our discussion to copyright, it is thought by many people that buying an NFT would confer copyright protection to the buyer of the NFT. This is a misconception exists among the general public. The general rule is that the creator of the work is conferred with the copyright to the work and during the sale of an NFT, only the particular copy of the work in a tokenized form is conveyed to the purchaser of the NFT.⁹² This could be comprehended with the help of an example. Let's assume, an individual buys a book which has autograph of a popular writer. The act of putting an autograph on the book by the writer has bring it in similarity with NFT. In the present situation, the individual has the ownership rights in that particular book just like the buyer of an NFT is conferred with the NFT and the writer of the book would be the copyright holder who would have all the exclusive right as being the author of the work and thus would be authorized to reproduce and distribute the books in the markets. A fact to note here is that this autograph by the writer would make this book distinctive and precious by creating an artificial scarcity.

Another key issue that concerns the creator of a work is whether the minter of an NFT could get copyright protection of NFT under the Indian copyright law. According to Section 13 of the Indian Copyright,⁹³ “works in which copyright subsists are original literary, dramatic, musical and artistic works; (b) cinematograph films; and sound recording.” As described above, NFTs are virtual assets in the form of metadata which are added on a blockchain and are cryptographically signed which make them distinctive from the other copies. So, it could be deduced that this unique identification codes and metadata of the NFT can get copyright protection as it would be treated as a literary work under section 2 (o) which states that literary work “includes computer programmes, tables and compilations including computer databases”⁹⁴ and section 2 (ffc) which define computer programmes as “a set of instructions expressed in words, codes, schemes or in any other

⁹² Phillips Ormonde Fitzpatrick, 'Dune, DAO and Copyright' (Lexology 1 March 2022) <<https://www.lexology.com/library/detail.aspx?g=a81604bb-59a6-4ae4-802f-39e01e2a3bfe>> accessed 26 March 2022.

⁹³ Section 13, The Copyright Act, 1957 (IN).

⁹⁴ Section 2(o), The Copyright Act, 1957 (IN).

form, including a machine readable medium, capable of causing a computer to perform a particular task or achieve a particular result.”⁹⁵

Generally, the terms of NFT ownership are as stated: “Only limited personal non-commercial use and resale rights in the NFT are granted and you have no right to license, commercially exploit, reproduce, distribute, prepare derivative works, publicly perform, or publicly display the NFT or the music or the artwork therein. All copyright and other rights are reserved and not granted.”⁹⁶

These general terms of sales and ownership rights are extremely limited for the buyers of the NFTs along with this the terms clearly shows that there are various differences between the rights pertaining to NFT with the rights on the underlying asset.

Therefore, artists generally keep their resale royalties right with themselves which are also known as droit de suite. Under the Indian Copyright Act, resale share rights are being recognized under section 53A (1) which states that “In the case of resale for a price exceeding ten thousand rupees, of the original copy of a painting, sculpture or drawing, or of the original manuscript of a literary or dramatic work or musical work, the author of such work if he was the first owner of rights under section 17 or his legal heirs shall, notwithstanding any assignment of copyright in such work, have a right to share in the resale price of such original copy or manuscript in accordance with the provisions of this section.”⁹⁷

The requirements in this section raise another significant concern related to the sale of NFTs. The droit de suite or resale share right as we call them is found on the conveyance of ownership rights in the original artistic work or original script of a musical, dramatic or literary work. And as these resale share rights are available only to the original copies of the work. Consequently, artists could not avail these rights in the case of NFTs as copyright does not subsist in NFTs themselves but on the underlying asset. And just because the pre-requisite objecthood and elements are present in the underlying asset this does not change the fact that NFT does not fulfill the demand of section 53A of the Copyright Act.

⁹⁵ Section 2(ffc), The Copyright Act, 1957 (IN).

⁹⁶ ‘Mike Shioda’ <<https://www.mikeshinoda.com/NFTTerms>> accessed 26 March 2022.

⁹⁷ Section 53A (1), The Copyright Act, 1957 (IN).

However, in the case of on-chain NFTs, when the original copy of the work is added on the blockchain. The transfer of the NFT through sale would be considered as sale of the original copy of the asset and which thereby triggering the resale share right provision. For these reasons, the artist of the underlying work would be eligible to receive royalties on the resale of the NFTs, provide that all the other condition under the provision is met. But this presume the fact that owner of the underlying asset and the NFT is the same person along with the fact that there exists no tangible original copy of the work other than the NFT.

And even if the off-chain NFTs are not able to fulfill the requirements made under resale share rights provision. A similar system may be applied with the consensus of both the parties of the transaction and these rights could be added in the code of the smart contract which is added on the blockchain by the artist themselves or through the intermediary or the marketplace in the form of service.

4.1.2. Non-Fungible Token and Copyright Infringement

The unimaginable buildup of NFTs has created an environment where everybody is trying to mint their work and release them as NFTs.⁹⁸ And due to this limelight, it was a matter of time that contradictions start emerging between different parties as to their claim on the asset. Also, many people are utilizing works on which the copyright belongs to another person and started minting them as NFTs.⁹⁹

This unauthorized minting of NFTs is most alarming for the digital artists.¹⁰⁰ As it can be seen by many artists that NFTs which is based on their artworks are listed on the marketplace without their permission. And this situation was expected since the hype of NFT is just going upward which means the revenue which could be earned by selling an NFT is also increasing with the growing hype of NFTs.

⁹⁸ *Hermes Int'l v. Rothschild*, 22-cv-384 (AJN), (S.D.N.Y. Feb. 10, 2022).

⁹⁹ Hefty Art brings MF Husain's paintings to the metaverse; exclusive partner for NFTs' (The Times of India 1 February 2022) <<https://timesofindia.indiatimes.com/spotlight/hefty-art-brings-mf-husains-paintings-to-the-metaverse-exclusive-partner-for-nfts/articleshow/89242719.cms>> accessed 27 March 2022.

¹⁰⁰ *Ibid.*

Lately, this an authorized minting of work as NFTs have took under its grasp the public domain work.¹⁰¹ An illustration of that could be seen as an organization named as Global Art Museum started using historic public domain works and mint them as blockchain secured NFTs. According to their website, Global Art Museum is “an art initiative that aims to transform grand Old Masters, from the Renaissance to Neoclassicism, into NFTs.” In addition to this, they claim that 10 percent of all the proceeds from the sale would be given back to the museum.¹⁰²

This particular incident has started a lot of discussions around the globe. And the reason for that it there are many critical concerns which emerges from this incident, and which needs to be dealt. For instance, firstly, to determine the justifiability of an NFTs which are based on public domain works, and whether this act buy the Global Art Musuem can be considered as copyfraud. Secondly, whether this act by the organization trigger copyright infringement by minting the work as NFTs.

Copyfraud refers to the act of fraudulently and falsely making a claim of copyright on a work which exists in public domain.¹⁰³ Public domain works is basically understood as works which could not fulfill the criterial for copyright protection or if the term of the copyright protection on the work is over.¹⁰⁴ In the current situation, the public domain works refer to the work on which the copyright is expired. And therefore, any person could use these works but, in some situation, people can make a false claim over these works and there will not be any legal effect as copyfraud, is not recognized in majority of countries however this act of fraudulently making a wrong claim on a work will amounts to be infringing the original author's moral rights under the Indian copyright law. There are two different moral rights belongs to the creator of the work which are being recognized by the copyright law independently of the author’s copyright under section 57 of the Copyright Act. Firstly, “the right to claim authorship of the work;” and secondly, “to restrain or claim

¹⁰¹ Sarah Cascone, 'A Collective Made NFTs of Masterpieces Without Telling the Museums That Owned the Originals. Was It a Digital Art Heist or Fair Game?' (Artnet 22 March 2021) <<https://news.artnet.com/art-world/global-art-museum-nfts-1953404>> accessed 27 March 2022.

¹⁰² 'GAM - Global Art and the Museum' <<https://zkm.de/en/project/gam-global-art-and-the-museum>> accessed 27 March 2022.

¹⁰³ Jason Mazzone, 'Copyfraud' (2005) 81 NYULR 1026.

¹⁰⁴ P L Jayanthi Reddy, *International Property and Public Domain* (Icfai University Press 2008).

damages in respect of any distortion, mutilation, modification or other act in relation to the said work if such distortion, mutilation, modification or other act would be prejudicial to his honor or reputation.”¹⁰⁵

So, while there may not be any copyright infringement taking place while dealing with the issue of public domain work as the copyright over the work has already expired but the issue related with moral rights of the author cannot be neglected, so now diving back to the situation at hand it needs to be analyzed whether the minting of works by Global Art Musuem amounts to copyfraud.

As it could be concluded from the discussion in the above chapters that to mint an NFT, one needs an underlying asset which could form the basis for the NFT. In the present situation, Global Art Musuem uses the digital arts which exists in the public domain from the digital collection of Rijksmuseum.

Also, this particular museum promotes the modification and transformation of its work, to make a statement in support of public domain works.¹⁰⁶ They even allow the general public to download their work from the digital collection of their website free of cost apart from this people can also order poster based on the museum’s works. All these works which is available without any restrictions belong to the public domain and thereby the copyright subsist in the work has been expired. So, it could be concluded that the Global Art Museum have legitimate rights in minting artworks into NFTs,

In addition to that, it could also be argued that the act of Global Art Museum does not constitute copyfraud. As the organization has already clarified that they do not have any ownership rights on the underlying asset and there is no association between the Global Art Musuem and the Rijksmuseum. It is further claimed by the organization that they have just used the work and mint that work to turned into an NFT and add that to the blockchain. Additionally, they have argued that they do not own the underlying asset and they are transforming these works into an NFT. Hence, there is no copyfraud.

¹⁰⁵ Section 57, The Copyright Act, 1957 (IN).

¹⁰⁶ <<https://www.rijksmuseum.nl/en/research/conduct-research/data/policy>> accessed 28 March 2022.

So, while some people might see this approach rather critically, however, it could not be considered as something illegal unless there is a violation of author's moral right.

Although it was thought-provoking to deal with the aspect of copyfraud with respect to NFTs, yet the critical area of discussion is whether unauthorized minting of a work to NFT by a person who is not the copyright owner of the underlying asset would be considered as copyright infringement or not. As there is a huge rise in unauthorized listing of NFTs in the various marketplaces.

This is an interesting question to answer. On first impression this question looks noticeably clear and unchallenging as layperson would generally think that unauthorized minting a work and turning it into NFT would amount to copyright infringement. However, it will not be clear unless it is analyzed what constitute an NFT and how it is minted. Only after getting sufficient understanding this aspect could be answered correctly. So, from our previous discussion, we can recollect that NFTs are mostly metadata which represent the underlying asset. So, is this act of minting a work by writing codes can amount to infringement?

At this point profound comprehension of the technical aspect of the NFT become essential. As explained, Most of the NFT with the exception of on-chain NFT are just codes which are used to write the metadata which represent the underlying asset. It was earlier explained that a person uses a digital version of an asset to generate two unique numbers with respect to that digital copy which are Contract Address and Unique Id. After this the NFT is combined with the smart contract and get added on the blockchain network. Generally, it the code which contain within itself the smart contract and various other things such as link to the underlying work.

Closely looking, it would be awfully hard how an unauthorized minting of an NFTs could amount as copyright infringement as an NFT is just some metadata which is generated from the work through coding. Generally, NFT does not include the work and therefore, the tokenized version of the work could not be regard as identical to adaption of the work or its reproduction. It could however be considered as a communication of the work.

There are three necessary conditions which need to be fulfilled for an act to be considered as a copyright infringement.¹⁰⁷ Firstly, a person does anything for which the exclusive right is subsist with any other person without the license by the copyright holder or the registrar of copyright;¹⁰⁸ Secondly, the two works must have some causal connection; and thirdly, there is a substantial copying of the work, or the work is entirely copied.¹⁰⁹

Let's consider all the three requirements sequentially for the sake of clarity. Considering whether there is causal relationship between NFT and the underlying work, it can be acknowledged that an NFT is obtained by writing some codes on the work. For making an NFT the digital copy of the work is needed and thus, it could be concluded that there exists a causal relationship between NFT and the underlying work. This requirement is fulfilled by both the types of NFT be it on-chain NFT or off-chain NFT as in both the case the digital copy of the work is needed which could be represented as an NFT.

Coming to the issue, whether a work is entirely copied or there is substantial copying of the work while minting an NFT. The type of NFT would decide the answer to this issue. In case of on-chain NFTs and the work is uploaded to the blockchain in its entirety, and thus indisputably the work is entirely copied while minting and hence minting an on-chain NFT would be regarded an infringement on the work. But a point to note here is that, uploading an entire work on the blockchain is rare as cost for uploading is extremely high. Due to this reason most of the NFT are metadata based NFT and it is clear that the substantial part of the work is not copied while minting the NFT, as this metadata is just code which is not a copy of the work but is generated in a technical manner. However, it could be argued that though the minting of the work is not considered as an infringement of the work, yet the listing of that work on a marketplace could amount infringement.

Looking at the first requirement at last, due to its complex nature, whether the activity of unauthorized minting of a work would constitutes an act for which the exclusive rights is provided to the copyright owner?

¹⁰⁷ V.K Ahuja, *Law Relating to Intellectual Property Rights* (3rd ed Lexis Nexis 2018).

¹⁰⁸ Section 51, The Copyright Act, 1957 (IN).

¹⁰⁹ Ananth Padmanabhan, *Intellectual Property Rights: Infringement and Remedies* (LexisNexis 2012).

Section 51 of Indian Copyright Act primarily states two instances where a work shall be considered to be infringed, firstly, “when any person does anything, the exclusive right to do which is by this Act conferred upon the owner of the copyright,” and secondly, “when any person permits for profit any place to be used for the communication of the work to the public where such communication constitutes an infringement of the copyright in the work, unless he was not aware and had no reasonable ground for believing that such communication to the public would be an infringement of copyright.”¹¹⁰ And broadly speaking, the exclusive rights of the author are the right to reproduce the work, the right to issue copies of the work, the right to give on rent or sale, the right to perform the work in public, the right to make adaptation, derivation and translation of the work, the right to communicate the work to the public.¹¹¹ Not all these rights are applicable in case of NFTs; Thus, only aspects of the rights to reproduce the work, right to make adaptation and the right to communicate the work to the public has been discussed below.

Firstly, looking at the arguments to consider whether minting of a work into an NFT would be considered as the reproduction of the work. Analyzing both the type of NFT separately. As discussed above in the case of on-chain NFT, the answer to the question is relatively easy as to add the work in its entirety, there is a clear reproduction of the work as one copy of the work is uploaded on the blockchain. But these NFTs are rarely seen in the listing of the marketplaces, generally most NFTs are metadata which are encoded using an underlying asset, where the resulted NFT bring a distinctiveness to the underlying asset. Despite the fact that an individual could produce many different unique copies of the same underlying asset. For the time being, it is presumed that only a single NFT is created from an underlying asset and thus, we need a digital copy of the work to bring about the minting process where asymmetric key cryptography is used and the work is added on the blockchain.¹¹² However, the individual needs to digitally sign the token before it is added to the blockchain to maintain its uniqueness. Once the NFT is added on a blockchain

¹¹⁰ Section 51, The Copyright Act, 1957 (IN).

¹¹¹ Section 14, The Copyright Act, 1957 (IN).

¹¹² Simanta Shekhar Sarmah, 'Understanding Blockchain Technology' [8] 2018 CSE <https://www.researchgate.net/publication/336130918_Understanding_Blockchain_Technology> accessed on 25 March, 2022.

network, the digital copy of the work is not required for the existence of the NFT as the NFT exist independent of the digital version of the underlying asset. Let us Suppose, while minting a work into an NFT, the creator of the NFT only makes a single digital copy of the work which is not linked to the metadata of the work. Then, it could be said that there is not any direct connection between NFT and the digital copy of the underlying asset and hence, the process of minting the work in an NFT cannot be considered as a reproduction of the work and it would be a complete legitimate act from the legal perspective.

Secondly dealing with the argument whether an NFT be consider an adaptation of the work. Let us loot at section 2(a) of the Indian Copyright Act, 1957.¹¹³ It defined adaptation in extremely limited terms. The Copyright Act states that adaptation means firstly, “in relation to a dramatic work, the conversion of the work into a non-dramatic work; secondly, in relation to a literary work or an artistic work, the conversion of the work into a dramatic work by way of performance in public or otherwise; thirdly, in relation to a literary or dramatic work, any abridgement of the work or any version of the work in which the story or action is conveyed wholly or mainly by means of pictures in a form suitable for reproduction in a book, or in a newspaper, magazine or similar periodical; fourthly, in relation to a musical work, any arrangement or transcription of the work; and lastly, in relation to any work, any use of such work involving its rearrangement or alteration.”

As the adaptation is defined in extremely specific terms under the Indian copyright law and for that reason it would be very hard to bring tokenization of an asset under the strict definition of adaptation under the copyright law. The tokenization process needs to be broadly interpreted for considering NFT as an adaptation of the work. It could also be argued whether NFT could be considered as a translation of the underlying asset into another format similarly to format shifting. As generally in case of translation of a work, a work is converted from one format into another and the resulting translation consist some identifiable elements of the former. An analogy to this could be drawn from a case decided in 1982, it was held in *Brigid Foley & Hunter v. Elliott*¹¹⁴ that the defendant has not infringed the copyright in the knitting guide by knitting a garment by following the

¹¹³ Section 2(a), The Copyright Act, 1957 (IN).

¹¹⁴ *Brigid Foley v. Elliot* [1982] R.P.C. 433.

instructions mentioned in the guide and thus transforming a work into a different thing altogether by using a copyrightable work as base could not amount to adaptation of the work. In comparable manner, judge John Whitford of the British court in the case of *J & S Davis (Holding) Limited v Wright Health Group* observed that “you do not infringe copyright in a recipe by making a cake.”¹¹⁵

At last, the most interesting and a compelling argument in favor of the potential copyright infringement in an act of tokenization of the work without the authorization of the copyright holder would be to analyze how a minting of the work into an NFT could be considered as a communication to the public under the copyright law. Basically, this exclusive right of communicating the work to the public would enable the right holder to restrict the act of other people which amount to communication of the work. For instance, unauthorized streaming of movies and songs to the public through an application or a website, or making a live telecast of the performance of the artist to the public, etc.

To consider this issue of communication of the work to public through the NFTs would again require us to dive back to the technicalities of NFT and the elements which NFT consist within itself. As have been discussed above, one of the general elements which exists in the metadata of an NFT is the URL to the digital copy of the underlying asset which was used in the making of the NFT. The link to the cloud storage or to the IPFS network is however optional and it is not mandatorily required by the minter.¹¹⁶ And in some situation the platform itself host the work on its server, however, it is not a mandatory practice. And thus, the point to be stressed for the current analysis is that the work is generally not stored directly by the creator of the NFT or the marketplace platform where the work is listed for sale.

For now, we can accept this argument that the unauthorized minting of a work to make an NFT which does not contain a link to the digital copy of the underlying asset is not an infringement on the copyright of the work. But the situation become difficult for the minter

¹¹⁵ *J & S Davis (Holding) Limited v Wright Health Group* [1988] RPC 403.

¹¹⁶ Seyed Mojtaba, Hosseini Bamakan, Nasim Nezhadsistani, Omid Bodaghi & Qiang Qu 'Patents and intellectual property assets as non-fungible tokens; key technologies and challenges.' (2022) *Sci Rep* 12, 2178.

when the NFT contains a link to the digital copy of the underlying work. As before putting the link of the storage where the digital copy of the work is stored, the work must be uploaded on the cloud storage or the IPFS first. And this act of unauthorized uploading a digital copy of a copyright work would itself amounts to copyright infringement as the technology used in these storages are censorship resistant and the copies which are stored in this storage could not be altered or removed as these copies become immutable once they are added on this distributed network protocol. And thus, once the work is added on these network protocol, the communication of the work to the public is triggered as the process of uploading the work is irreversible.

The jurisprudence in regard of linking and communication to the public in the light of the copyright perspective has not been developed in India. Only EU have developed a consistent approach to deal with this issue using various case laws. Therefore, an analysis of this issue is needed in the light of the various case laws determined by the EU courts.¹¹⁷ A well-established fact in this regard is that the publishing of the link which direct to an infringed file as done by the major torrenting website amounts to copyright infringement of the underlying work as the act of hosting the link on the server is considered as communication to the public.

In this regard the case of *Dramatico Entertainment Ltd & Ors v. British Sky Broadcasting Ltd & Ors* (2012)¹¹⁸ would be extremely relevant for the current analysis, the facts of this case were such that the plaintiff, a music copyright holder, filed for an injunction against the defendant, an internet service provider which require them to deny access to an illegal filesharing platform 'The Pirate Bay'. One of the issues in this case was to determine whether the act of hosting links and distribution of infringing copies of the copyright work would be considered as a communication of the work to the public or not. In this regard the court answer in affirmative that as a matter of fact the act by the file sharing platform would be communication to the public as "copies of the sound recordings are made available to users who have not purchased them from an authorized source". And therefore,

¹¹⁷ Berggren Oy, 'Linking and Copyright Law in the European Union - Where do we go from here?' (Lexology 8 December 2020) <<https://www.lexology.com/library/detail.aspx?g=af0557cd-6f40-4509-bc8f-30538a14bf14>> accessed 27 March 2022.

¹¹⁸ *Dramatico Entertainment Ltd & Ors v. British Sky Broadcasting Ltd & Ors* [2012] 3 CMLR 15.

an analogy could be made between hosting of links by the torrent websites with the hosting of links by IPFS file sharing platform in the process of minting NFTs which there by concludes the fact that hosting of link to an infringing copy by an NFT would be considered as communicating the infringing copies to the public. Apart from this issue, this case also highlights the potential liability of the secondary infringers while dealing with communication to the public. These secondary infringers could be sellers of multimedia makers, Internet service provider, etc which are generally used by the public to access the infringing works, this aspect of communication to the public could be relevant for various NFT marketplaces.

The Court of Justice of the European Union has been dealing a lot with this issue in the last few years and developed a consistent approach by using some common elements developed in these case laws. For instance, in *Nils Svensson and Others v Retriever Sverige AB*,¹¹⁹ it was held by the court that hyperlinking to the copyright content which is freely available to the general public on other websites would not amount to copyright infringement. In this case the court construed the ‘public’ in communication to the public to mean ‘new public’. Further in *GS Media BV v Sanoma Media Netherlands BV and Others*,¹²⁰ the issue before the court was to find whether a link directed toward a file storage service which contains within itself thousands of photos which belongs to the brand ‘playboy’ would amount to copyright infringement. The court held that the unauthorized storing and distribution of the protected work with the object of earning revenue would amount to copyright infringement when the person linking the work has sufficient knowledge that the link is directing to potential infringing works.

For the time being, it could be concluded that where the metadata of an NFT contains within itself the link which direct to the protected works of an artist without proper authorization would amount to communication to the public, provided that the two requirements which was held in the *GS Media* case are fulfilled. The first requirement which is related to the ‘For profit’ element is already fulfilled as the NFT is made for the purpose of earning revenue from it and secondly if the publisher of the link has the requisite

¹¹⁹ C-466/12 *Nils Svensson and Others v Retriever Sverige AB* [2014] ECR 76.

¹²⁰ 160/15 *GS Media BV v Sanoma Media Netherlands BV and Other* [2016] ECR 644.

knowledge regarding the infringing copies. If both these elements are there then the act of linking the NFT to the digital infringing copies would amount to communication to the public.

In India, the jurisprudence in regard of linking and communication to the public is not developed, however the communication to the public is defined under section 2(ff) of the Indian Copyright Act as “making any work or performance available for being seen or heard or otherwise enjoyed by the public directly or by any means of display or diffusion other than by issuing physical copies of it, whether simultaneously or at places and times chosen individually, regardless of whether any member of the public actually sees, hears or otherwise enjoys the work or performance so made available.”¹²¹ A general reading of this provision would clearly show that the act of linking an NFT to the digital infringing copies would infringe artist exclusive right of communicating the work to the public.

Nonetheless, an interesting opposing argument to this view is that there is not any communication of the work at all due to several reasons. But primarily the reason is because the link which exists in an NFT is basically included in the code of the NFT while the general hyperlinks are just common hyperlinks which exist on the Internet. In the GS Media case, the hyperlinks which are being dealt with are related to common web links, The interesting fact is however that though the link is available to the general public but is really hard for the general public to find it. And the link may also be added on a smart contract which is generally private in nature. And for extracting this link, it is required from an individual to have some technical knowledge along with the two unique elements of an NFT which are contract address and Unique Id number.

Another reason which supports that there is not any communication to the public at all rely on the fact that the threshold for considering something as ‘public’ is not met when dealing with links in NFTs. As the communication in case of NFTs are limited to very few individuals it may not be considered as a ‘public’. However, in this regard *SGAE v Rafael Hoteles*¹²² bring a new perspective, as in this case the issue was whether the act of watching

¹²¹ Section 2(ff), The Copyright Act, 1957 (IN).

¹²² C-306/05 *SGAE v Rafael Hoteles* [2006] ECR 764.

television by the guest of the hotel would be considered as a communication to the public. The Court of Justice of the European Union in this case held that repetitive act of watching television by the small number of hotel guests could meet the threshold to be considered as communication to the public.

But this interpretation by the EU courts could not be applied in India as under the Indian law it is stated that an act would be considered as a communication “regardless of whether any member of the public actually sees, hears or otherwise enjoys the work or performance so made available.”

Nevertheless, the fact that only a small number of technical experts can view the link to the digital copy in the NFT as the link is embedded in the codes which exists on blockchain, one can argue that it would not be feasible to consider these technical experts as public. So, it would need the interpretation of Indian courts for considering whether the link present on the NFT is similar in nature to the link available on Internet, for determining whether the act of posting the link on an NFT would be considered as communication to public or not.

This discussion would not be completed without discussing the liability of secondary infringers in NFTs which are primarily the marketplace or the platforms where they are being offered for sale.¹²³ Although minter of NFTs can sold their NFT directly to the purchaser, most of the minters use the service of intermediaries such as auction houses and NFT marketplaces to sell their NFTs. Some of these intermediaries also help the owner to mint their work in an NFT and even host a webpage where the NFT is listed for sale.¹²⁴

The listing of the NFT on the website is not the NFT itself as assumed by many, it is just a thumbnail of the work, however these platforms have the capacity to receive payment on selling the NFTs through the purchaser cryptocurrency wallet as these platforms are also run on the blockchain network they could track the ownership of an NFT to its original creator. These platforms also contain a variety of information regarding the NFT

¹²³ Padmanabhan (n 110) 329.

¹²⁴ Valentina Mazza, 'The liability regime of an NFT marketplace for infringing contents' (GamingTechLaw 22 February 2022) <<https://www.gamingtechlaw.com/2022/02/liability-nft-marketplace-infringing-content.html>> accessed 15 May 2022.

transaction such as the wallet address of the issuers along with thumbnail of the work which is hosted on the linking page, link to the smart contract and a link to the network file system where the work is stored such as IPFS. Also, these platforms provide a service where the work could be hosted by them.

And due to the very fact that the listing of the NFTs contains the link to the network file system and many times a thumbnail of the work, which is a digital copy of the underlying asset, the website is more vulnerable to copyright infringement if the platform was just hosting the NFT code. And for those reasons, these platforms should maintain a powerful mechanism for notices and takedowns of the NFT listing along with very explicit rules in respect of copyright infringement by their clients.

Though the liability of the platforms can be discussed for the current analysis. As the act of hosting links which direct to the infringing copies along with this the act of hosting thumbnail on the listing page will be communication of work to the public. However, globally the situation appears that the act of listing the work for sale would be covered under the safe harbour defense if the platforms offer a robust mechanism for notices and taking down infringing content.

Under Indian law the exceptions under which the liabilities of the intermediaries are excused are discussed under the Information Technology Act, 2000. Section 79(1) of the IT Act states that “Notwithstanding anything contained in any law for the time being in force but subject to the provisions of sub-sections (2) and (3), an intermediary shall not be liable for any third party information, data, or communication link made available or hosted by him.”¹²⁵

So basically, this safe harbour provision would only be triggered when the requirements mentioned under section 79 (1) and 79 (2) are met which are firstly, the function of the platform should only be limited to as a communicating medium between the issuer and the purchaser of the NFTs; secondly, the platform does not commence or start off the transaction, choose the purchaser of the NFT by itself and make alteration to the data contained in the transaction; and lastly, the platform should observe due diligence while

¹²⁵ Section 79(1) Information Technology Act, 2000 (IN).

performing his duties along with observing all the necessary guidelines issued by the central government.

Therefore, at last it could be concluded that the act of listing an NFT for sale on its website by the platforms would amount to copyright infringement unless all these requirements are fulfilled by the platforms.

4.1.2.1. Is NFT a transformative artwork or a vehicle for commerce?

Generally, it is the rule that unauthorized minting an on-chain NFT would be a copyright infringement as it is a truly native blockchain work in which the minter uploads the whole work into the blockchain network. These NFT are basically considered as an adaptation or reproduction of the underlying asset and thus amount to copyright infringement. But in cases where the underlying asset is a work of art, there exists several gaps with respect to copyright infringement which are regularly being exploited by the digital artist while minting an NFT.

But before proceeding with the analysis it is necessary to discuss some copyright related terms such as adaptation, derivatives and transformation.

In spite of the fact that the transformative work, derivative work and adaptive work looks similar in nature, yet transformative works are totally different and belong to a separate group of works contrary to the adaptive and derivative works.¹²⁶

As already discussed above adaptation is generally a conversion of a work into a different format. For instances, many novels are being performed as dramas. While derivative works are the cinematographic film or sound recordings which are created by using an existing work as a base and includes some amount of originality for instance, making a cinematographic film which is based on a novel. On the other hand, transformative works are the work which are entirely new and different and just are inspired from an existed work.

¹²⁶ Neeraja Seshadri & Prathiksha Chandrashekar 'The Enigma of Transformative Use in fair dealing under the Indian Copyright Law' (The IP site 2020) <<http://blog.ciprnuals.in/2020/07/the-enigma-of-transformative-use-in-fair-dealing-under-the-indian-copyright-law/>> accessed 16 May 2022.

The concept of adaptative and derivative works belongs to same genus as in both there is a conversion of the work into a different format. However, in transformative works it is not the format which is changed but the whole work is transformed into something different. As both derivative and adaptative work are substantially based on the original work and for that reason the possibility of infringement by these works is also considerably high. But the situation with transformative works is different as these works just use the raw data of the original work to make something new and thus considered as an exception to copyright infringement.¹²⁷

In India, a principle resembling the exception of transformative work have been developed by the landmark judgement of *The Chancellor Master & Scholars of the University of Oxford v. Narendra Publishing House and Ors*¹²⁸ a few years back. The Hon'ble court held that "where the theme is the same but is presented and treated differently so that the subsequent work becomes a completely new work, no question of violation of copyright arises." However, the exception of transformative work in relation to artistic works is arguable and relatively undetermined in India. However, In USA the courts by using a broad interpretation over the fair use doctrine have observed that appropriation of arts which done by modifying the existing work to be a transformative work and thus would be an exception against copyright infringement.

While the NFT market in art domain is rising to new heights, the purchasers of NFTs are showing great desire for ownership rights over the NFTs which are based on artworks created by renowned and acclaimed artists; Lately various artists have spoken out against creators of NFTs who have unauthorizedly listed an NFT which is based on their work of art for sale on popular NFT marketplaces. Many artists have object that their artworks are being tokenized into NFTs which amounts to copyright infringement

¹²⁷ Aishwariya Chaturvedi 'Transformative Metaphorsis under Copyright Law' (Legal Era Online 14 May 2019) <<https://www.legaleraonline.com/articles/transformative-metamorphosis-under-copyright-law?infinitescroll=1>> accessed 16 May 2022.

¹²⁸ CS(OS) 1656/2005 (Delhi HC).

as they are communicating their work to the public without their permission.¹²⁹ On this argument the creators of NFTs have argued that they have recontextualize the existing art and created something new, thus the work would be considered as a transformative work. This argument is yet to be tested as no case in relation to appropriation of artwork by an NFT have been decided by the courts, thus, the rightsholders are still arguing that the act of appropriation of their artworks would amounts to copyright infringement.

4.1.2.2. Art Appropriation and fair use as defense

Before the arrival of NFTs, the act of appropriation of artworks have generated a lot of dispute and disagreement by challenging the conventional viewpoint of authenticity and creativity from the copyright perspective. For a long time, appropriation artists are acquiring, adapting, modifying, reproducing, and copying the work, partially or in entirety. It is just that the tool of Appropriation has enable the artist to innovate and recontextualize the existing art to create something entirely new. For appropriation of artworks, artist usually use an existing artwork—generally an artwork from acclaimed artist and transform the art by applying some artistic quality in it to make something creative.

Over the years appropriation art and copyright aspect of it has been evolved notably through various judgment of the US courts. Earlier courts used to have a strict approach toward applying fair use defense over appropriating artworks and usually held that the transformation of art by appropriating it amounts to copyright infringement. But in recent years, courts have generally based their decision on the idea of “transformative use” to observe that appropriation of artworks could be bring under the defense of “fair use”. Thus, for the current analysis it is necessary to discuss few of these judgements to have a better understanding.

The first case in this regard is *Roger v. Koons*¹³⁰ from three decades back. This case is one of the noteworthy cases pertaining to modern art. The facts of the case were such that the plaintiff, Art Rogers who is a photographer from profession is the owner of a photograph

¹²⁹ Eileen Kinsella ' A Curator Allegedly Minted Unauthorized NFTs of Art by Anish Kapoor and Others. Now, He May Get Slapped With Lawsuits' (Artnet 23 November 2021) <<https://news.artnet.com/art-world/art-wars-unauthorized-nft-sales-2039341>> accessed 16 May 2022.

¹³⁰ 960 F.2d 301 (2d Cir. 1992).

named as ‘Puppies’ claimed that the defendant, Jeff Koons has infringed his copyright on the photograph by creating a sculpture titled as ‘String of Puppies’ based on his photograph. On this the defendant argued that the intention and object of the artist behind the sculpture was to make a critical statement on the photograph along with the socio-economic environment that influenced it. While the defendant displayed his sculpture in an art exhibition and put on sale the copies of it, Rogers filed a case for copyright infringement against Koons. The defendant however rejects all the claims made by the plaintiff and argued that the transformation of photograph into a sculpture would be fair use as it was a satire on the original work. To this issue, the court decided in favour of the plaintiff that the defendant infringed the copyright on plaintiff work by copying it and that defendant could not take the fair use defense due to the ‘purpose and character’ element. It means that though the defendant made a critical statement on the original work, however, it was done primarily for making profit by misappropriating the work of the plaintiff and therefore, the work could not be considered as a fair use.

After fourteen years, the US court again dealt with the issue of copyright infringement in appropriation art in *Blanch v. Koons*¹³¹ (2006). The facts were such that the plaintiff, Andrea Blanch filed a suit for copyright infringement against prominent visual artist, Jeff Koons. The plaintiff alleged that the defendant has made a collage for an art show commissioned by the Guggenheim using a photograph which belongs to the plaintiff. The plaintiff further claimed that the defendant has violated his copyright in a photograph by including a part of the photograph into his collage. The district court gave the decision in favour of the defendant. On appeal by the plaintiff against the district court judgement, the court by using the four-part test of the fair use defense holds that defendant has not infringed the copyright over the plaintiff photographs while using them in his collage as the act done by the defendant is sufficient transformative in nature in light of the amount and nature of the material used. The decision of the court was also based on the fact that the public display of the collage could not be considered as a commercial exploitation and because there was no bad faith.

¹³¹ 467 F.3d 244 (2d Cir. 2006).

In 2013, the issue of appropriation art again came before the United States Court of Appeals for the Second Circuit in the case of *Prince v. Cariou*¹³². The facts were the plaintiff, Patrick Cariou who is a photographer by profession has released a book which consist of many different photographs named as 'Yes Rasta'. He claimed that Richard Prince, a popular appropriation artist, has modified and included various photographs from Yes Rasta into his collage the 'Canal Zone' and displayed it in an art gallery. A year after the exhibition the plaintiff filed a suit against the defendant and the gallery which displayed the Canal Zone for copyright infringement in the US district court. However, the defendant argued that his act would be considered as appropriation of art and thereby comes under the fair use defense. On this issue, the United States Court of Appeals for the Second Circuit gave his decision in favour of the defendant by reversing the judgement given by the district court which laid an improper legal standard to bring a work under the fair use defense, The appellate court held that the twenty-five of the photographs out of the thirty which were in consideration can be considered as a fair use as they have been recontextualized in the new artwork and convey new meaning over the original work. The court further held that the collage made by the defendant is transformative in nature at the defendant has added a completely different artistic over the photographs in terms of presentation style, combination, color palette, etc. And due to those reasons, the work of defendant is substantially different from the work of plaintiff.

4.1.2.3. NFT as a medium for appropriation

So now the question arise what does NFT have to do with these appropriation art disputes? Similar to art appropriation, NFTs also set free the artwork from conventional notions of novelty, creativity and authenticity and lead them to latest opportunities and potentialities which thereby helps in achieving Joseph Beuys' vision of "everyone is an artist" and "free societies."¹³³

There is a very thin which demarcate the originality and appropriation in NFTs. The fact that NFT works in a decentralized server has raised many challenges with respect to

¹³² 714 F.3d 694 (2d Cir. 2013).

¹³³ Aleksandra Artamonovskaja 'NFTs as a medium for appropriation' (erlystage) <<https://erlystage.com/nfts-as-a-medium-for-appropriation/#:~:text=Throughout%20art%20history%2C%20artists%20have%20however%2C%20makes%20all%20the%20difference.>> Accessed 16 May 2022.

copyright infringement and moral rights violation as there is a lack of authority. The blockchain technology further helps the infringers to access and copy the work of other artist without any consequences.

Despite the fact that blockchain technology offers a lot of positives and opportunities to digital artists, the fact that it makes the artist moral rights and copyright susceptible to infringement cannot be ignored. As NFT are based on peer-to-peer network, it works without any centralized authority nonetheless the creator of the work needs to involve himself and check the validity of the NFTs to put a stop to unauthorized minting of NFTs.

It is quite evident that blockchain technology has enable public to reappropriate copied content for the purpose of review, criticism or transformation. There is a disclaimer on the listing website that “artists should never mint a work containing copyrightable elements of another’s work unless they are authorized by the copyright owner or a valid fair use defense applies.” Just like in Prince v. Cariou where Cariou alleged that appropriated work by prince was too similar with the photographs taken by him, Digital artist could sue the infringers for copyright infringement when the work which is being minted as NFT is very similar with the work of the artist. There are various means for appropriation which can be involved in these disputes, for instance, Collage based on preexisting photographs or art, animated version of preexisting work, etc. And a “context sensitive inquiry” needs to be done to determine if the NFT which is based on the underlying work is transformative enough to constitute fair use.¹³⁴

There is also beauty to the possibilities the new medium has offered as NFTs could actually help people reclaim their rights by ‘copying’ the copier or re-appropriates the appropriator. An excellent example of such resistance has been made by the model Emily Ratajkowski for her genesis NFT release.¹³⁵ Back in 2014, the Art world’s most prominent appropriation artist Richard Prince took a screenshot of two of her photos on Instagram for his 2014 “New Portraits” series. At the time, Ratajkowski was unable to secure the first

¹³⁴ Nina Kong-Surtees 'Is NFT a new Medium for Appropriation?' (NYC Gallerina 28 July 2021) <<https://nycgallerina.com/blog/2021/7/28/is-nft-a-new-medium-for-appropriation>> accessed 16 May 2022.

¹³⁵ Aleksandra Artamonovskaja 'NFTs as a medium for appropriation' (erlystage) <<https://erlystage.com/nfts-as-a-medium-for-appropriation/#:~:text=Throughout%20art%20history%2C%20artists%20have,however%2C%20make%20all%20the%20difference.>>Accessed 16 May 2022.

painting, which featured a nude photo of her and was sold to another buyer for \$80,000. Finally managing to acquire the other Prince's piece, she now has minted a picture of herself standing in front of the work in her apartment. In this case, the NFT is allowing her to regain control.

For celebrities like Emily Ratajkowski, it could be said that the NFTs are a way to reclaim publicity rights by raising awareness about the exploitation of models specifically and copyright infringement generally. Ratajkowski's NFT enabled her to use Prince's work as a means to profit from her own image. Her \$140,000 sale demonstrates that NFTs could be a potential response to copyright infringement in lieu of a lawsuit if the NFT creator has enough name recognition and a fan base in their own right.

4.2 Non-Fungible Token and Trademark law

The first and the primary concern for brands while selling their NFT is to make their listing in the marketplace as unique as possible and therefore, they incorporate their trademark in the NFT. Nonetheless, many unauthorized minting and selling of NFT takes place which incorporate the popular brands trademark without their permission and thereby constitute trademark infringement. For instance, In the fashion world companies like Lois Vuitton and Tiffany are incorporating their brand's trademark in their NFTs so that their customers can get trace the authenticity of the NFTs. The incorporation of trademark into NFT raises many interesting questions such as Whether the registration of trademark for the protection of a specific type of good or service would cover under itself the use of a trademark as an NFT? Secondly, whether NFTs could provide an alternative authentication system for the brand's assets? Thirdly, how the rights of the brands are affected when someone creates an unauthorized NFT incorporating brand's trademark? Fourthly, can an owner of a registered trademark make an NFT which is based on the registered trademark or not?

These complicating problems could be resolved if the brands start expanding their trademark registration so that it could cover NFTs which incorporate brands' trademarks.

4.2.1. Can a Non-Fungible Token be Trademarked?

As brands and creators become more aggressive in creating their own unique virtual tokens during this NFT boom, it would be prudent to include these assets in their IP

protection strategies. It's quickly becoming apparent that NFTs are joining the limited list of signs which can act as a badge of origin for traders.¹³⁶

One of the major uncertainties of NFT ownership is that proof of identity lies in the blockchain, which is currently unregulated. The blockchain does have the advantages of being an open-sourced distributed ledger so ownership and transfers can be traced. When dealing with such high-valued assets, traders should consider extending their trade mark portfolios to include these assets.

The section 2 (zb) of the Trademark Act, 1999¹³⁷ states that “trade mark means a mark capable of being represented graphically and which is capable of distinguishing the goods or services of one person from those of others and may include shape of goods, their packaging and combination of colours;” which means that trademarks are the marks which are capable to distinguish (i) goods and (ii) services and the section 2(j) define goods as “anything which is the subject of trade or manufacture;” Therefore, it could be concluded that the NFTs can be trademarked as it can be traded in various market place present online and can be minted by using blockchain technology.¹³⁸

Thus, it could be said that trademark protection definitely applies to an NFT. Registering a trademark for classification comprising NFT would enable the brand owners to protect unauthorized minting of their trademark in NFTs. It would further ensure that no one could use a mark identical to or similar to the mark used by the brands in an NFT.

Trademarking an NFT ensures that no one else can use the same or similar name or logo for their NFT. Trademarking an NFT ensures that no one else can use your name or logo, which keeps them distinctive. Trademark protection is a must for any brand owner who wants to protect their NFTs. That's how trademarks apply to NFTs.

Now the question arises if trademark protection applies to NFTs then Under which trade mark classes could the NFT artworks fall under?

¹³⁶ Gudrun Irsa-Klingspiegl 'NFTs and branding – Does trademark protection need to be considered?' (ICLG 22 July 2021) <<https://iclg.com/briefing/16813-nfts-and-branding-does-trademark-protection-need-to-be-considered-austria>> accessed 16 May 2021.

¹³⁷ Section 2(zb), The Trademark Act, 1999 (IN).

¹³⁸ Section 2(J), The Trademark Act, 1999 (IN).

4.2.1.1. NICE Classification with respect to Non-Fungible Tokens

The Trademark Act, 1999 demands under section 7 (1) that “the Registrar shall classify goods and services, as far as may be, in accordance with the international classification of goods and services (NICE Classification) for the purposes of registration of trade marks. And in a case where any goods or services are not specified in the alphabetical index of goods and services published under this sub-section the classification of goods or services shall be determined by the Registrar.”¹³⁹

For the online marketplace such as Opensea which sell NFT and act as an intermediary between creator of the NFT and their buyer, the NICE Classification has pre-approved terminology. As online marketplaces are a well-established service that have already existed for many years for different type of goods and services, it was expected that there would be a preexisting class for such type of service in the alphabetical list of the Nice Classification under class 35 ("provision of an online marketplace for buyers and sellers of goods and services"). Irrespective of the fact that the NFT marketplace runs on blockchain technology. Therefore, it could be assumed that the trademark for an NFT marketplace could be protected under the existing substructure of NICE Classification.¹⁴⁰

Now considering if the virtual goods or service provided with respect to NFTs could be found in the alphabetical list of the NICE Classification.

As work of art can usually be provided with trademark protection. It could be simply assumed from the fact that under the “International Classification of Goods and Services (NICE Classification system) already contains pre-approved wording for artworks of various materials, such as metal works of art in Class 6, or works of art made of card in Class 16 of NICE Classification.”¹⁴¹

Similarly, a digital art could be provided with trademark protection. If NFTs are considered as being similar to digital artworks, then they would likely be classified in Class

¹³⁹ Section 7(1), The Trademark Act, 1999 (IN).

¹⁴⁰ International Classification of Goods and Services (Nice Classification WIPO) <<https://www.wipo.int/classifications/nice/en/>> accessed 16 May 2022.

¹⁴¹ Ibid.

9, under recorded content. This imposes a relatively shallow viewpoint of what constitutes an NFT however, and they could theoretically fall into a variety of classes depending on the specific NFT and its method of representation.¹⁴²

Further, the work of art itself could be provided with trademark protection and the fact that tokenization of the art took place does not complicate the situation as it does not matter for what type of services or the goods the art is used by the brand in a trademark. In another situation the tokenized version of the art is used as a trademark by the brand in various good and service and therefore for that particular case the brands need to get trademark protection for those specific goods and services.

Thus, it could be concluded that there is as such no typical strategy to get trademark protection for virtual goods and service provided in respect to NFT arts and marketplaces.

4.2.2. Trademark Infringement by Non-Fungible Tokens

Generally, infringement under the trademark law took place when an unauthorized person who tries to mint an NFT from an asset without the brand owner's permission, and use the brand's mark in the course of the trade while advertising, offering for sale or actually selling the NFT incorporating brand's trademark.

The main point of consideration here is to find out that whether the brands owner has registered trademark for NFTs or similar types of goods or services and if the brand has trademark registered for these goods and services than then there is a very straight forward case for infringement as the unauthorized act of incorporating that mark into an NFT would amount to trademark infringement.¹⁴³

As section 29 (1) the Trademark Act, 1999 states that it would constitute an infringement of a registered trademark "if an identical or a deceptively similar mark is being used in

¹⁴² Gudrun Irsa-Klingspiegl 'NFTs and branding – Does trademark protection need to be considered?' (ICLG 22 July 2021) <<https://iclg.com/briefing/16813-nfts-and-branding-does-trademark-protection-need-to-be-considered-austria>> accessed 16 May 2021.

¹⁴³ Tim Lince 'OpenSea: how trademark infringement is rampant on the biggest NFT marketplace' (World Trademark Review 20 January 2022) <<https://www.worldtrademarkreview.com/opensea-how-trademark-infringement-rampant-the-biggest-nft-marketplace>> accessed 16 May 2022.

relation to identical goods or services in respect of which the trade mark is registered” by the asset owner.¹⁴⁴

Also, section 29 (2) of the Trademark Act, 1999 states that “it would constitute an infringement of a registered trademark (a) if the identity of the new mark with the registered trade mark and the similarity of the goods or services is covered by such registered trade mark; or (b) if the similarity of the new mark to the registered trade mark and the identity or similarity of the goods or services is covered by such registered trade mark; or (c) if the identity of the new mark with the registered trade mark and the identity of the goods or services is covered by such registered trade mark, So that it would likely to cause confusion on the part of the public.”¹⁴⁵

Even so, in the situation where the brand owner doesn’t have trademark registered for NFTs or similar goods or services, this won’t imply the fact that there would be no infringement of registered trademark: as it may be possible, in certain circumstances, that use of the same or similar mark for dissimilar goods would amounts to infringement.

As section 29 (4) of the trademark Act states that it would amount to an infringement of a registered trademark where “the new mark is identical with or similar to the registered trade mark; and is used in relation to goods or services which are not similar to those for which the trade mark is registered; and the registered trade mark has a reputation in India and the use of the mark without due cause takes unfair advantage of or is detrimental to, the distinctive character or repute of the registered trade mark.”¹⁴⁶

The infringement of trademark by the unauthorized creator is a very serious concern for the artists or the author of the underlying asset as there are arising number of cases where the NFT incorporating trademark of reputed brands are listed for sale in the various NFTs marketplaces.

And hence, there are a number of lawsuits which are being filed by the major brands against NFT sellers for trademark infringement. For instance, Miramax, the entertainment studio

¹⁴⁴ Section 29 (1), The Trademark Act, 1999 (IN).

¹⁴⁵ Section 29(2), The Trademark Act, 1999 (IN).

¹⁴⁶ Section 29(4), The Trademark Act, 1999 (IN).

has filed a lawsuit for copyright and trademark infringement against popular director Quentin Tarantino for announcing an auction for selling 12 NFTs based on the cult movie Pulp Fiction.¹⁴⁷ Also, Hermès, the luxury design house has launched a legal action against Mason Rothschild, who has launched a collection of 100 NFTs branded as ‘MetaBirkins’ that depicts Birkin bags and sold the NFTs for tens of thousands of dollars.¹⁴⁸

As currently, while suits for trademark infringement by NFTs are relatively few, it is very evident that popular brands are being exploited by creators of NFTs on the NFT marketplace as it could be seen that there are hundreds of anonymous accounts that have listed NFTs incorporating the logos and trademark of popular brands. Therefore, some liability has to be fixed on the NFT marketplace for regulating the trade of NFTs and make policy against NFT seller who sell NFT of major brand names and logos and thus reduce trademark infringement.

4.2.2.1. Trademark Rights Art Appropriation

As discussed above, there are various issues and concerns which arises out of NFT in respected of trademark and one such issue is appropriation of trademark during the branding of the NFT and how it affects rights of the trademark owners.

The case of Hermes International et al v. Rothschild¹⁴⁹, where Hermes alleged that Rothschild has appropriatedHermes’s trademark on its popular brand ‘Birkin’ by branding his NFT as ‘MetaBirkin’ and thereby infringes Hermes trademark rights.

Appropriation art in respect to trademark rights refers to borrowing or copying a popular or well recognized trademark and incorporate it in a new artwork. The most iconic appropriation artist in respect of appropriating trademark rights is Andy Warhol, who is known for his famous artwork which incorporate Campbell soup cans. This artwork by

¹⁴⁷ Miramax (n 90).

¹⁴⁸ Hermes Int’l (n 89).

¹⁴⁹ *ibid.*

Andy Warhol is one of the most iconic illustrations of appropriation art of trademark rights.¹⁵⁰

As already discussed, the appropriation art raises various copyright issues and therefore led to a number of cases in respect of copyright infringement. Generally, nowadays courts do not consider every case of appropriation art as copyright infringement as can be seen from the cases of *Blanch v. Koons*¹⁵¹ and *Prince v. Cariou*.¹⁵² On the other hand, courts have held the famous Prince series of Andy Warhol as Copyright infringement as it could not meet the threshold for transformative work and thus can't be considered as an exception under the fair use defense. The courts in copyright infringement cases where there is an art appropriation has used the fair use test to find out whether a work is transformative enough to consider itself as an appropriation art.

However, various appropriation artists have argued before the courts that applying the fair use test over the appropriation art could disable the artist to incorporate existing work into a new artwork which thereby hinder the creativity and development of the art world. Additionally, they argued that as the fair use test is not well defined it threatens artwork which are transformed from a pre-existing work. And in cases of trademark infringement which deal with art appropriation, the fair use test is less relevant as can be seen in the case of *Dallas Cowboys Cheerleaders, Inc. v. Pussycat Cinema, Ltd.*¹⁵³, where the court did not used the fair use test in case of trademark infringement by appropriation art.

Whenever an appropriation artist appropriates a trademark into an art, the right to freedom of expression under the 1st amendment is implicated and therefore a more relevant test when an art appropriates a trademark is the balancing test or the roger test which was articulated by the United Court of Appeal for the Second Circuit in the case of *Rogers v. Grimaldi*.¹⁵⁴

¹⁵⁰ Sterne, Kessler, Goldstein & Fox 'Does NFT Appropriation Art Appropriate Trademark Rights?' (Sterne Kessler February 2022) <<https://www.sterneessler.com/news-insights/publications/does-nft-appropriation-art-appropriate-trademark-rights>> accessed 16 May 2022.

¹⁵¹ *Blanch* (n 132).

¹⁵² *Prince* (n 133).

¹⁵³ 604 F.2d 200 (2d Cir. 1979).

¹⁵⁴ 875 F.2d 994 (2d Cir. 1989).

The facts of the case were such that popular artist Ginger Rogers filed a complaint against Alberto Grimaldi who produced and distribute the film titled 'Ginger and Fred'. Roger alleged that this film has violated his trademark rights under Lanham Act and right to publicity. The court noted that this dispute presents a conflict between the right so Rogers's right to publicity and Grimaldi's right to express himself freely in his own artistic work. And question which need to be answered was whether Rogers can prevent Grimaldi to use the title 'Ginger and Fred' for a film which very loosely relates to the plaintiff.

The lower court held that Grimaldi cannot be held liable and this decision of lower court was affirmed by the Court of appeals which stated that "suppressing an artistically relevant though ambiguous[ly] title[d] film" on trademark grounds would "unduly restrict expression." Additionally, the court held that "section 43(a) of the Lanham Act does not bar a minimally relevant use of a celebrity's name in the title of an artistic work where the title does not explicitly denote authorship, sponsorship, or endorsement by the celebrity or explicitly mislead as to content."

This test basically holds that a trademark which is used in very artistic manner is protected by the 1st amendment and therefore, the art would be immune from trademark infringement provided that the use of the trademark has some artistic relevance to the artwork and it doesn't mislead the general public as to the source of the artwork.

Consequently, to decide whether an artwork constituting a trademark would implicate the 1st amendment would depend on various factors associated with the artwork such as the intensity of the risk associated with the source of the artwork, degree of artistic relevance in the artwork and the elements suppressing it.

However, just a few years back in the case of *Stouffer v. Nat'l Geographic Partners, LLC*,¹⁵⁵ the US federal court of tenth circuit has refused to follow the balancing or the roger test as this test would lead to the potential destruction of the trademark rights of the brands. And instead of applying the rogers test, the court gave out a new multifactor test titled as genuine artistic motive test. The aim of this test is to find out whether the secondary user of a mark had some genuine artistic motive for using the primary user trademark. Primary the major

¹⁵⁵ *Stouffer v. Nat'l Geographic Partners, LLC*, 460 F. Supp. 3d 1133 (D. Colo. 2020).

difference between both the test is that in rogers test, the artistic relevance inquiry needs to fulfill a threshold while in Genuine Artistic Motive test there is not a threshold inquiry but it is just one of the factors among the many factors like whether the mark used by primary and secondary users was to identify the identical or similar kind of goods, whether the secondary users has used any expressive content in art other than the trademark itself, Whether the intention behind using the trademark by the secondary user was to capitalize the popularity of the primary user, Whether the trademark has any artistic relevance in respect to the artwork, Whether the act of the secondary user could imply any non-artistic motive in respect of using the trademark in the artwork.

Thus, a clear shift from the Rogers test to the “Genuine Artistic Motive” test can be seen from the analysis of the various case law in regard to appropriation art which thereby protects the brand identity from the fraudulent artists who tries to exploit the goodwill of the brand’s trademark by appropriating it.

4.3. Non-Fungible Token and Personality Rights

Personality rights is a branch of IPR that tries to safeguard the rights of people with certain reputation or popular personality from infringers who tries to monetize from features of their persona.¹⁵⁶ Since these reputed personalities have certain goodwill which attached to their persona, opportunities arise for certain people to commercialize from this aspect. The general position in regard to protection for personality rights in different legal system are basically divided as a firstly, personality right as right in itself as can be seen in US legal system and secondly, protection by the common law remedy of passing off which can be seen in countries like UK and India.¹⁵⁷

The NFTs which portray images of popular personality are more in demand in comparison to those NFT which don’t in terms of both the marketing as well as the financial terms. As can be seen from the fact that various professional sportsperson has entered the market to auction their NFT which depict them.

¹⁵⁶ Niki Shadoan ‘NFTs and Personality Rights’ (One37PM 15 December 2021) <<https://www.one37pm.com/nft/nfts-and-personality-rights>> accessed 16 May 2022.

¹⁵⁷ *ibid.*

Some have argued that NFTs help celebrities take back their personality rights. They present a new marketing opportunity for athletes and celebrities to profit from their name, image, or likeness. This has allowed athletes to become their own marketing platforms and negotiate for these rights to fall outside the scope of collective bargaining agreements. Pursuant to this, many athletes, as mentioned above, have sold their own trading cards and digital collectibles outside of leagues and team structures, thereby allowing them to reclaim their personality rights. For instance, a one-of-a-kind digital trading card of soccer player Cristiano Ronaldo sold for just under \$290,000.¹⁵⁸ NFT's popularity would also result in celebrities exploiting their own names and likeness as digital tokens, due to which any future infringements of such rights will be carefully vetted and strictly enforced.

Personality rights can be infringed when an unauthorized person listing for sale NFTs incorporating individuals' image, name, or reputation in any form. In this particular situation the intermediary involved in the transaction will also contribute to the violation of the personality right of the celebrity. Furthermore, the individual who buys those NFTs are also liable when they resale these NFTs or exploit the underlying work for promoting their monetary interests. For example, when an entity uses the NFT to drive consumers and create traffic in their websites. The liability of the marketplaces depends on the respective state law. Though generally they would be considered as secondary infringers unless they follow all the due diligence to prevent the violation of the celebrity rights. By this way personality right can be enforced while buying, selling or even hosting the NFT incorporating another's rights.¹⁵⁹

One of the most prominent cases in regard to publicity rights is the one involving Michael Jordan and Jewel Food Stores, where Michael Jordan filed a law suit against Jewel Food Stores for violating his publicity rights by congratulating him for his inclusion in the Hall of Fame on an advertisement ran on the back cover of the sports magazine. It was held in

¹⁵⁹ Valentina Mazza, 'The liability regime of an NFT marketplace for infringing contents' (GamingTechLaw 22 February 2022) <<https://www.gamingtechlaw.com/2022/02/liability-nft-marketplace-infringing-content.html>> accessed 15 May 2022.

this case that the advertisement ran by Jewel Food Stores is commercial in nature and additionally it is trying to monetize from the name and fame of Michael Jordan.

This case involving Michael Jordan and Jewel Food Store is an illustration as to how celebrity can claim their personality rights once their rights are getting violated when an individual tries to exploit the likeness of the celebrity for commercial interest. And this issue might come in NFT space at some point as it can be seen in various NFT marketplaces that NFTs depicting celebrity are being listed for sale.¹⁶⁰

As the technology behind NFT is relatively new and there are not many cases which surrounds them, thereby it would be very difficult to predict as to how personality rights will affect the NFT space. Furthermore, though the popular celebrities might not concern with monetary law but it would be a huge deal for the small and upcoming celebrities.

4.4. Patent Law Implication of Non-Fungible Tokens

It has been discussed that NFTs, present many new opportunities and threats for IP rightsholders in the area of trademark and copyright laws. The situation of NFTs in patent area is no different, even in patent space new opportunities and challenges are being presented by NFTs for some time now. There are various domains where NFT has revolutionize the patent law such as:-

4.4.1. NFT as a Tool for Transfer of Patent Assets

The present patent system followed across the globe functions on registers maintained by the respective patent authorities — both national and international. The primary functions of these authorities are to process the patent applications, ascertain whether they are eligible for protection and act as clearing bodies by recording licenses, pledges or other changes in lieu of the patent granted. These functions become incredibly cumbersome, involving wastage of time and workforce, especially in the context of recording the post-grant transactions associated with a patent. NFTs could facilitate the tracking and recording of legal transactions relating to a patent without involving patent offices. For instance, a person wanting to transfer his patent license to another individual may do so without

¹⁶⁰ Jordan v. Jewel Food Stores, Inc. - 743 F.3d 509 (7th Cir. 2014).

intimating the authorities; as such, a transfer would automatically be recorded in the blockchain, which the authorities can further verify.¹⁶¹

Furthermore, patent ownership may be transferred via NFTs, and as it runs on blockchain technology that means the ownership of the patent can get tracked. These NFTs can also be attached with self-executing contracts to facilitate the transfer of IP rights with regard to patents when the NFTs are being transfer from the seller to the purchaser. The blockchain system is functional in terms of constructing a chronology of events associated with a patent represented as an NFT. The smart contracts which can be embedded onto a patent NFT can hold a range of terms and conditions as desired by the owner, including how he wants his patent to be used, the duration of its usage, aspects of sub-licensing and its commercialization. Additionally, the fair value of a patent can be readily ascertained as the blockchain records the history of the patent NFT, such as the ownership, licensing, production, litigation, commercialization etc.¹⁶²

The creation of an NFT marketplace for patents would require a lot of time and energy along with that it would require the patentees to adopt a new model in relation to recording of patent rights such as ownership, assignment and licensing. Also, a lot of works needs to be done to create the digital representations of the patent which need to be sold as an NFT. Additionally, the process would be complicated further in cases where the assignment or licenses of patent are done without recording the transaction on the blockchain network thus creating contradictory records of the transaction. Nonetheless, the work in respect to such a NFT based marketplace has already started.

Creating an NFT-based marketplace for asset types, such as patents, will take time and would require patentees to adopt a new model with respect to recording patent ownership, transfers and licensing. A lot of initial work would be required to create the digital representations of ownership of existing patents as NFTs. Difficulties may arise if transfers

¹⁶¹ Jacqueline Salwa, 'Will NFTs revolutionize patent law?' (JD Supra 10 August 2021) <<https://www.jdsupra.com/legalnews/will-nfts-revolutionize-patent-law-3657179/>> accessed 16 May 2022.

¹⁶² *ibid.*

or licenses were made but not recorded on the blockchain, thus creating conflicting records of ownership; however, work on such a marketplace has begun.

A collaboration between IBM and IPwe has pushed for using NFT for protecting ownership of patents.¹⁶³ The organizations have come together to create a structure for NFT based marketplace on which the selling and transferring of patent rights through NFT would be processed. The marketplace would be used not only for selling patents but can also be used to set up license deals. The architects of this marketplace think that it will aid businesses in creating and evaluating patent portfolios. Patent offices may well join the band as the system grows, making it easier to utilize NFTs to document transactions linked to patents. For instance, the patent office may implement a verification method to certify the absolute patent ownership of the NFT creator. For freshly awarded patents, the patent office could even mint the NFT on its own and present the applicant with the private key along with the registration certificate. Any subsequent transactions would be immediately updated on the blockchain, and the register would record the NFT's current state, hence updating automatically.

Also, True Return Systems LLC and Boag Law PLLC has begun the auction for the U.S. Patent No. 10,025,797 ("the Patent") in the form of an NFT on the blockchain server.¹⁶⁴ This particular auction is first ever known sale of a patent through an NFT.

It was mentioned by these entities that the NFT which is available for auction along with the patent comprises of open and active licensing and litigation content to assist the buyer's rapid deployment of the Patent in a portfolio or a business operation.”

Despite the benefits of the proposed NFT-patent exchange regime, there are certain challenges in implementing the same. For example, the sale of patent and the licensing agreements would still be concluded in the offline realm. The NFTs may provide the

¹⁶³ Veronica Combs 'IBM and IPwe want to issue patents as NFTs and make them easier to monetize' (Tech Republic 21 April 2021) <<https://www.techrepublic.com/article/ibm-and-ipwe-want-to-issue-patents-as-nfts-and-make-them-easier-to-monetize/>> accessed 16 May 2022.

¹⁶⁴ 'True Return Systems LLC and D. Tiller Law PLLC Commence Sale of Foundational Blockchain Patent as a Non-Fungible Token (NFT)' (FinTech Futures 20 April 2021) <<https://www.fintechfutures.com/techwire/true-return-systems-llc-and-d-tiller-law-llc-commence-sale-of-foundational-blockchain-patent-as-a-non-fungible-token-nft/>> accessed 16 May 2022.

appearance that they may be relied on to ensure a patent's legitimacy. As a result, owners and potential owners of NFTs will still need to keep a track of ownership changes that take place outside the blockchain. Buyers will need to verify the patent's ownership or, at least, acquire an assurance of title from the seller, whether through a smart contract or otherwise. Another issue with NFTs and blockchain assets in general is that they require a lot of computing power, resulting in the usage of massive amounts of electricity emitting tons of carbon dioxide that are harmful to the environment.

4.4.2. NFT Related Inventions

Also, in addition to use NFT as a tool for transfer of patents, patents can also be obtained for various invention created out of NFTs such for instance, verification of patent's originality along with tracking the ownership of the tangible asset.

Also lately, it is seen that there is a rise in NFT patents which have come into markets for instance, Cryptokicks by Nike. This patent enables the users by providing a mechanism where a blockchain technology is used to integrate digital asset with their physical counterpart like shoes.¹⁶⁵

In Cryptokicks, whenever the transaction related to the sale of the shoe take place, the underlying token get activated. Further for streamlining this process, user or owner's identification code is linked to the shoe's 10-digit UIC 10-digit shoe identification code which would thereby link the owner with the show in an effective manner.

Just like every Non-Fungible Token, these tokens also use ERC 721 and further these tokens are listed on Ethereum blockchain.

When a person buys a shoe, he will receive a NFT attached to the shoe which he can transfer to the subsequent purchaser of the shoe to prove the authenticity of the shoe sold.

¹⁶⁵ Matthew Beedham, 'Nike now holds patent for blockchain-based sneakers called 'CryptoKicks'' (TNW 10 December 2019) <<https://thenextweb.com/news/nike-blockchain-sneakers-cryptokick-patent>> accessed 15 May 2022.

Along with tracking the ownership of the shoes, it will additionally help the owner to record certain specific type of information in relation to the shoe in the token for example, designs, size, color, material, etc.

Further, the patent enables the owner of the shoe to have an additional control over it. For instance, the shoe owner can control the number the duplicates which can be manufactured over the same design. Additionally, the owner has the option to provide rights to the subsequent buyer to fuse and create a new design of the shoe.

Also, just like Cryptokitties, the owners of the shoes can breed new shoes. This breeding process could cause restriction in relation to shoe manufacturing as the rights over the subsequent generation of the shoe will be linked to the original owner. Nike will allow people that own “CryptoKicks” to “intermingle or breed the digital shoe with another digital shoe to create ‘shoe offspring’ and have the offspring made as a new, tangible pair of shoes.”¹⁶⁶

¹⁶⁶ *ibid.*

Chapter – 5

Digital Right Management by NFTs

The role of blockchain in digital rights management is increasing thanks to the growing popularity of NFTs and DeFi.

NFTs are now an increasingly important component in the world of art and sports because of their blockchain-based nature as a clear, secure and transparent revenue system for digital rights and copyright for artists and athletes. This is a real revolution that is likely to change the overall complex system of rights management.

Transparency Market Research has released a report where they stated that the digital rights management market worldwide is predicted to be almost \$9 billion by 2026, growing at a compound annual growth rate (CAGR) of 15.3% since 2018. It is estimated that revenue lost to online piracy will almost double between 2016 and 2022 to reach at least \$51.6 billion, according to the 2017 Online TV Piracy Forecast Report.

NFTs are basically unique digital certificates that grant the owner the sole right to a work, all enshrined in a smart contract. In this way, the buyer is guaranteed to have sole ownership of the digital work and the smart contract certifies that the work is authentic and original.

The fact that blockchain contracts are certain and unchangeable gives a further guarantee of the validity of the object of the contract. NFTs in particular are likely to solve the problem faced by all artists working in the digital field, namely the provenance, ownership, distribution and control of digital artworks themselves.

This is perhaps the main component that blockchain is bringing to the business of digital rights: increasing their value exponentially, while guaranteeing their provenance and authenticity.

5.1 Assignment

As already discussed, there are many copyrights related elements in some specific type of NFTs. Also, most of the time the work is minted without the permission of the author which raises questions such as copyright infringement as already discussed in the previous chapters.

Generally, the sale of NFT doesn't imply the transfer of rights but there can be some cases where seller actually transfer some of his rights over the article to the purchaser of the NFT. Nowadays many NFT marketplace are incorporating features so that the seller of an NFT could transfer the copyright over an object along with the NFT, for instance, while selling an NFT on Mintable, the seller is provided with a tick box which he could click if he wants to transfer copyright and Mintable thereby would incorporate the transfer into the smart contract which would be attached with the NFT.

Now the question arises whether such minimalistic consent from seller would amount as a valid act of transfer of rights. Article 5(2) of the Berne Convention¹⁶⁷ state that the enjoyment and exercise of these rights would not be subjected to any formality and as there is no formal requirement which need to be fulfilled to alienate those rights under the Berne Convention and also as there is a little harmonization between the legislations of different jurisdiction, the validity of the rights depend on the specific municipal legislations.

With respect to transfer of right under the Indian law, the Indian Copyright Act states under section 19 (1) that "No assignment of the copyright in any work shall be valid unless it is in writing signed by the assignor or by his duly authorized agent."¹⁶⁸ In the broadest sense, the assignment of copyright would means transfer of ownership, however, the owner of the copyright can also assign specific exclusive rights and due to this specific reason, the requirement of assigning the rights in writing is even more important so that the assignment details can be specified clearly.

Now the question arises as to what does 'in writing' and 'signed' actually means under this provision? In respect to this particular aspect sufficient jurisprudence has been developed under the Indian law. It is established that electronic file can also be used to execute contract. Also, the requirement of in writing and signed under copyright law is identical to the requirement stated in the contract law. Therefore, the relevant case laws in respect to signed and written requirement can clearly determine a valid assignment. In the same way, whenever there is a requirement under the Indian law to have a document in written form, this specific requirement can be fulfilled by the use of technology and can be interpreted

¹⁶⁷ Berne Convention for the Protection of Literary and Artistic Works 1886.

¹⁶⁸ Section 19(1), The Trademark Act, 1999 (IN).

widely to incorporate within itself various technological mode of representing data in written form such as printing, photography, lithography, typing, etc. Also, section 4 of Information Technology Act, 2000 states that “Where any law provides that information or any other matter shall be in writing or in the typewritten or printed form, then, notwithstanding anything contained in such law, such requirement shall be deemed to have been satisfied if such information or matter is– (a) rendered or made available in an electronic form; and (b) accessible so as to be usable for a subsequent reference.” From some time now the courts interpret different type of format as written form from WhatsApp text to email.¹⁶⁹ In respect to assignment, even if the consent is minimal and in electronic form, the assignment would be valid provided that the document clearly identifies the work which is being assigned. This element of identifying the work in NFTs would be a little difficult to evidence as the assignment in some NFTs are done in computer codes.

And for the ‘signed’ requirement, the law has already has granted electronic signature the validity to be used in the legal document. In India, the legislation which regulates the working of electronic signature in respect to legal document is Information Technology Act, 2000. Section 5 of IT Act, 2000 states that “Where any law provides that information or any other matter shall be authenticated by affixing the signature or any document shall be signed or bear the signature of any person, then, notwithstanding anything contained in such law, such requirement shall be deemed to have been satisfied, if such information or matter is authenticated by means of 1 [electronic signature] affixed in such manner as may be prescribed by the Central Government.”¹⁷⁰ The act further defines electronic signature as “authentication of any electronic record by a subscriber by means of the electronic technique specified in the Second Schedule of the IT act and includes digital signature” Due to this legislation, courts are now giving validity to various type of signature to be used as electronic signature.

Although the existing laws and rules are widely drafted in respect to electronic signature, it is yet not clear in some jurisdiction as to whether cryptographic signature which is used to sign NFT would be considered as electronic signature. As discussed in the previous

¹⁶⁹ Section 4, Information Technology Act, 2000 (IN).

¹⁷⁰ Section 5, Information Technology Act, 2000 (IN).

chapters, while minting an NFT, the minter can put his unique signature which is a cryptographic key to which only the minter has access. Under the IT Act, the electronic signature. This cryptographic signature is termed as digital signature in IT Act. And as the definition of electronic signature also includes digital signature, thereby cryptographic signature used at the time of minting NFT would be considered valid under the Indian Law. Also, the law commission of England and Wales has interpreted signature as not only the physical signature but also various type of electronic record as signature.

And to determine the validity of the tick box to create a copyright assignment, this particular element of electronic assignment can be compared with agreements known as click-wrap agreement, these are the agreement where the consent given by the click of a button. The law on clickwrap agreement where 'I Agree' click button is used to enter into a contract can be seen for substantial number of case laws.¹⁷¹ It is apparent that when a party to a contract by their act give consent for entering into a contract then, ticking the box, signing electronically and filling the form could be taken together as an assignment to a contract.

After analyzing all these elements, there could still be little doubt left as to whether token written on blockchain network while minting NFT could satisfy the requirement of being written. While there are arguments from both the side regarding the validity of smart contract. But a positive opinion is growing for the validity of smart contract for transferring rights. Also, for the greater reassurance people are now using physical document and signature to ensure the proper transfer of rights.

¹⁷¹ Beta Computers (Europe) Ltd v Adobe Systems (Europe) Ltd 1996 SCLR 587.

Chapter – 6

Conclusion

With the rise of NFTs, there would be a lot of interaction between NFTs and IPR, in spite of the fact that most of the conflict arising by them would be resolved at the platform level. As the gateway of the NFT space, the NFTs marketplace are filtering all the listings which can be a potential infringement for the authors' IP rights and at the same time encouraging the creators to list NFTs which are their own creation. But even then, due to the dynamic nature of NFT space, several IP-related disputes would arise due to the incentive of earning profit.

In Copyright law, as there is a clear infringement in case of an on-chain NFT, the most complicated and discussed issue would be whether minting of an off-chain NFT would amount to copyright infringement. And as discussed in the previous chapters, as such there is no direct connection between an off-chain NFT and the underlying work which was used to create the NFT. At least from the perspective of the India jurisdiction, a strong argument could be made against the potential infringement for an unauthorized minting of an off-chain NFT. Though closer analysis needs to be done with respect to communication to the public while linking the NFT with the digital copy of the work. Generally, this aspect could be solved by not including smart contract while minting an NFT.

With the increase in demand of NFTs in the entertainment industry, the world is going to witness many more copyright infringement cases. And to determine whether there is an infringement, closer inspection must be done at the type of the NFT minted along with the link provided to the digital copy. This conflict is just one of the many legal disputes involving IPRs and NFTs. For example, recently, Nike has sued StockX for listing an NFT which resembles a physical copy of Nike Shoes which can be later traded for the physical counterpart of the NFT.

Also, with respect to trademark law, many companies are now applying for trademark registration over the digital version of their goods due to the massive popularity of NFTs. While some companies are protecting their NFT as literary work under copyright law. Under trademark law there is no standard strategy which is applied by entities when they

try to get trademark protection in conjunction with NFT marketplaces, NFT art as well as virtual worlds exhibiting NFT art. So, in relation to trademark law it is not the NFT aspect which is complex but the proper classification of goods and service related to NFTs.

And in cases where there is a conjunction between NFTs and appropriation art, the appropriation artist should firstly conduct a trademark clearance search for the name of their artwork which is inspired by an earlier trademark. Also, it can be seen that brands like, Nike are entering the meta space and have registered trademark in relation to NFTs which is based on their physical product. By this way brands would not only protect their goodwill and reputation in physical world but also in virtual world and thereby stop the possible future infringement of their brand. And as some of these infringements are being removed by the platform on the request of the IP rightsholder. But further adding a disclaimer to the listing of the work that appropriates a trademark or trade dress to disassociate it with the trademark/trade dress owner would help the appropriation artist to disassociate his work from the original work. Despite the fact that, as past has shown that appropriation artwork which appropriate a popular trademark is likely to incite an enforcement action and litigation.

Also, it can be seen that one of the best possible uses for NFTs would be in respect of digital right management for IP rights such as assignment, licensing and royalties right. The automated feature of the smart contracts would be highly beneficial to perform this task. Further, it is seen that with time more practical usages of NFTs are emerging. So, there is a need for awareness and education among the artists in respect to the areas surrounding NFTs as the amount of misinformation and misconception regarding NFTs is astonishing.

There are still many different questions which are open with regard to IPR and NFTs. This dissertation has not dealt with the question of first sale doctrine and exhaustion principle with respect to NFTs, which offers a really interesting approach that needs to be explored in the future. Also, the interface between NFTs and artificial intelligence-generated works are increasing with time. Similarly, this interrelationship between NFTs and IPR theory, needs to be studied further in the future with respect to the growing development in the

field of the NFT space as under this dissertation the author has just scratched the surface of a vast topic.

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