# Kluwer Copyright Blog

## The Rise of Non-Fungible Tokens (NFTs) and the Role of Copyright Law – Part I

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From relative obscurity only a few months back, public awareness of non-fungible tokens (NFTs) has risen dramatically. This has come about following their use in connection with the transaction of different types of digital content (including artworks), often for exorbitant amounts. The constant online news stream on NFTs is hard to miss, as illustrated by coverage in the New York Times, BBC, The Guardian, CNN, Wired, The Verge, and

Because much of the digital content linked to NFT transactions relates to creative expression, the question arises of how to consider NFTs from the perspective of copyright law, in particular the EU copyright *acquis*. We address this question in a two-part post. In this Part I we introduce the recent emergence of NFTs and proceed to explain what they are. This will provide a baseline understanding for our analysis of some of the copyright law implications of NFTs in Part II.

**The emergence of the NFT mania**

It is difficult to point to a single justification for the current NFT mania. Beyond the observations that it has coincided with the COVID-19 pandemic, and that it constitutes a novel type of blockchain-based experimentation and asset diversification (listen here), partly enabled by relatively recent standardization efforts (see below), it is probably too early to tell.

Nevertheless, reports on NFTs range between two extremes. On the one hand, they are hailed as potentially revolutionary tools to empower artists, improve their remuneration and reshape the digital arts market (but see here). On the other hand, they are viewed as the latest example of two structural challenges associated with blockchain-based technologies: their (potential and actual) use for fraudulent or at least speculative purposes, and their disproportionately negative effects on the environment. (We will not discuss this latter aspect further in this post.)

When Chris Torres, the Nyan Cat gif creator, published its corresponding token on the Foundation platform to celebrate the ten-year anniversary of the success gif, he could not have foreseen that the final selling bid would reach 300 ETH (about $590,000) on February 19, 2021. Since then, high profile NFT transactions and auctions are being carried out at the speed of light for a variety of digital objects, covering a broad spectrum of creative expression. To name a few prominent examples: Jack Dorsey's first tweet was sold on the Valuables platform for 1630 ETH (almost $3 million); digital artist Beeple has sold multiple NFT digital art pieces, including the piece "Everydays – The First 5000 Days" for an astounding $69.3 million in a Christie's online auction (the third-highest auction price for a living artist's work); and a New York Times column was tokenised and sold on the Foundation platform for 350 ETH (about $623,014).

In the music sector, NFT transactions by the artist Grimes and the band Kings of Leon (offering, for example, seats for future tours and vinyl records) have been highly publicized, but many more examples exist. Other illustrations include the sale of the digital collectibles by the project NBA TopShots and the *resale* of different types of digital files, such as Beeple's crypto artwork "Crossroad" or the now famous "Homer Pepe" digital card. Recently, the decision to dismantle the controversial 'Vessel' was followed by an announcement that a digital rendering of the design will be minted and auctioned as an NFT.

It seems that if you can imagine it, you can put an NFT on it. But the question remains as to what exactly NFTs are? And what makes them so valuable?

**What are Non-Fungible Tokens (NFTs)?**

Before diving into the intricacies of copyright law, it is important to understand what exactly an NFT is and what type of operations, uses or transactions it enables. (For additional guidance, see e.g., here). We divide this section into (a) basic characteristics of NFTs and (b) what do NFTs represent?

*a) Basic characteristics of NFTs*

NFTs are created and used in blockchain-based technologies. In simple terms, a blockchain is a distributed database that can record any type of information, where a consensus mechanism ensures that each added entry abides by and is consistent with earlier records on that same database. Depending on the type of blockchain, any entity/user that has access to the distributed ledger can inspect and verify all elements recorded on it, and potentially add to the existing records.

The basic characteristics of NFTs, as stated in their name, are the following: they are (a) *cryptographic tokens* of the (b) *non-fungible* type.

*Tokens* can be defined as "digitally scarce units of value the properties and circulation of which are prescribed via computer code". Tokens come in different varieties and flavours, ranging from coin-related tokens, to securities, assets, shares, etc. The common feature of different types of tokens is that they are computer code that constitutes a digital representation (of something) registered on a distributed ledger. This digital representation can be — if size permits — the digital object itself, its digital fingerprint (or so-called hash); or some kind of metadata which describes the object that is located physically elsewhere, i.e., "off-chain". An example of the latter is Mattereum which aims to provide token-based representations of physical assets without restrictions, to enable the automated transactability of physical objects through their tokenized representations.

One method to ensure the compatible use of tokens across different blockchains is to develop technical standards. Currently common NFTs are based on the ERC721 standard developed for the Ethereum blockchain for non-fungible tokens (ERC stands for 'Ethereum Request for Comments'). By contrast, most Ethereum-based fungible tokens are based on the ERC20 standard.

This brings us to the second feature of NFTs: *non-fungibility*. *Fungible* tokens can be replaced by an identical token and can therefore be exchanged with any other item that corresponds to its value. One good example is the bitcoin cryptocurrency: you can freely divide each bitcoin into smaller fragments (i.e., "satoshis") and you can exchange one bitcoin for other (crypto)currencies, usually through the services of an intermediary. Conversely, *non-fungible* tokens are intended to constitute non-divisible tokens, unique and distinguishable representations of a digital or physical asset (e.g., an artwork or a house). In other words, you cannot interchange one NFT with another NFT, nor can you sell parts of it.

As noted, for NFTs to perform their intended function, they require a blockchain-based system. This system provides the technical environment that allows NFT transactions to take place

securely. In practice, NFTs are first "minted", meaning that they are created or generated, and such act is recorded on a blockchain. They can then be the object of transactions, usually using the services of specific *intermediaries*. For instance, it is possible to transact with NFTs in digital marketplaces such as Valuables, Rarible, Open Sea, Nifty Gateway, Super Rare or Makers Place.

The subsequent transactions for an NFT are all recorded on the *same* distributed ledger or blockchain, signalling the respective ownership of the *token* in question. It is usually the case that if NFT *X* is minted through intermediary *Y* on blockchain *Z*, then transactions for *X* will take place exclusively on *Z*.

Both the minting and ensuing transactions of the NFT will usually be paid in what is called "gas", i.e., the Ethereum-introduced unit of measure based on the computational power needed to perform a specific operation on the Ethereum blockchain. The gas needed for each transaction will vary depending on the congestion of the network. The busier the network, the higher the fees. Admittedly, most famous NFT transactions have been performed using ETH. Overall, authorized currency for performing these operations is decided on a platform level. For instance, and to take our previous example on NBA TopShots, the website authorizes transactions using different stablecoins, cryptocurrencies or fiat money. So, and unless an artist (or NFT creator) opts specifically for a fiat-exclusive platform, they will need to exchange their crypto/stable-coins for fiat money. This process will involve further intermediation and fees through exchanges, like Coinbase.

*b) What do NFTs represent?*

To say that there is confusion on what is really represented by an NFT would be an understatement (see here and here). In its most basic form, an NFT is *metadata* that is timestamped (or written) on the Ethereum (or EOS, TRON etc.) blockchain, using the above-mentioned standards to mint it with the help of a smart contract to signify that the token is unique. In simplified terms, a smart contract is a piece of software run on a blockchain and executing if-then conditions, for instance, *if* you place the highest bid in an auction, *then* you automatically get the auctioned NFT and the seller receives the amount you committed.

As noted, an NFT is metadata that represents and points to where the digital object and any details about it really reside.

This has two important consequences that matter for the legal analysis under copyright. First, an NFT is *not* the object it points to (e.g., a digital artwork). Second, there is no guarantee that an NFT will always point and link to that digital object or file. In other words, the object may be moved or deleted, for instance because of changes in operation by the service provider that hosts it.

Evidently, link permanence is not an NFT-specific issue. But, since an NFT is in essence a metadata representation that contains a link to something, the risks (and damages) associated with an NFT linking to nothing are significant (see here). Some technical solutions might address this problem. For instance, the Interplanetary File System (IPFS) attempts to resolve this by offering additional services that ensure copies of the work are distributed in many hosts, thus maintaining content. However, this solution has already shown its limitations, with multiple NFT links pointing to absent underlying files. This raises questions about the actual value of such NFTs, as well as about the liability or damages claims that buyers, (re)sellers, and even artists might be able to raise.

To complicate things further, precisely what is being attached (or linked) to an NFT can vary even

more. For instance, intermediary platforms that facilitate NFT minting and transactions give users the opportunity to add attributes to the token to increase the scarcity or uniqueness of the associated digital object. For example, the OpenSea platform offers the possibility to add unlockable content or other special 'textual or numerical' traits, exclusive to the buyer.

Despite the recent mainstream attention, NFTs are not a new phenomenon. Historically, the first NFT-enabling feature was created on the bitcoin blockchain as early as 2012 (see here and here). Referenced as colored coins, these tokens used the existing bitcoin infrastructure to assign and represent asset-specific rights management such as property and digital collectibles. This meant that their development was based on a bitcoin-specific technical standard and on a relatively inefficient blockchain. Conversely, decentralised asset-management platforms emerged, delivering digital blockchain-based game and card collectibles and later, the infamous Rare Pepes. In these "early years" of blockchain hype (up until 2019), NFTs were mainly developed for use in the digital collectibles and video games industry, e.g., to create and dispose of Cryptokitties' virtual cats, computer game skins, or avatars. Other known examples include sports cards, postal stamps and even NFT-based sneakers. In this most recent iteration, the range of creative expression linked to NFTs has grown significantly, making questions about their status under copyright law more relevant.

*In Part II we will discuss certain copyright law implications of NFTs.*

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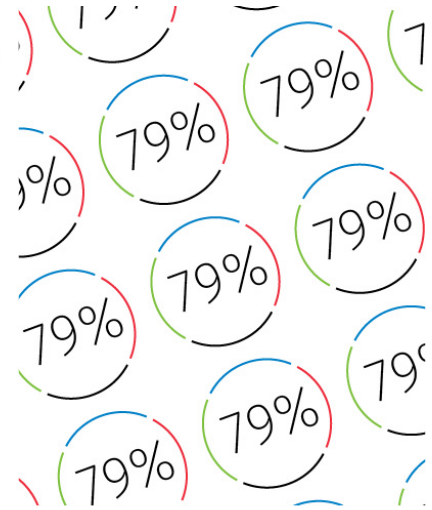
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