NFTs and copyright: challenges and opportunities
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I. Introduction
The attention paid to blockchain technology has always been shadowed by the ever-popular Bitcoin. Bitcoin is not the only life-altering outcome of the blockchain revolution. Each day we come across another useful aspect of blockchain technology: first, it was smart contracts, then initial coin offerings, then security token offerings and, since the beginning of March this year, there has been a lot of hype around non-fungible tokens (NFTs). While different digital art and collectibles are tokenized and sold for mind-boggling amounts, there are some legal questions, including regarding copyright law, that need to be tackled.

This article will develop as follows: In Part II, we first describe the main characteristics of blockchain technology, and its important features that impact NFTs. Then, we consider where NFTs should be classified within the different groups of tokens. We define NFTs and consider why they are so popular nowadays and how they interact with smart contracts. In Part III, we discuss the legal implications of NFTs in general and with a focus on some problems that arise in copyright law mostly on the qualification of minting and selling and the consequences of purchasing an NFT.

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II. Blockchain technology, smart contracts and their interaction with NFTs
NFTs are certificates of ownership powered by smart contracts and protected by blockchain technology.

This article
- Blockchain technology and its applications, such as smart contracts and cryptocurrencies, are in the headlines each day with new uses or products for various sectors. Since March 2021, non-fungible tokens (NFTs) have gained popularity and the sales volume of NFTs has grown tremendously. Time will show if this is a financial bubble that is meant to burst, but it sure has some legal implications.
- NFTs, being tokens functioning on the blockchain, raise some questions with regard to securities law, property law and contract law. The most highly debated questions are in the area of copyright law.
- In this article, the problems arising from the creation and sales of NFTs are tackled in light of copyright law, mostly with a focus on the legal qualification of minting and selling, ownership and the consequences of purchasing an NFT. The qualification of minting and selling is uncertain due to the fact that underlying work itself is not stored in the NFT. It will be hard to prevent the creation of unauthorized NFTs if it is concluded that the process of minting and selling is not included within the exclusive rights of copyright. Furthermore, the smart contracts enable creators of an NFT to receive payment for resale of the NFTs without meeting the conditions of a resale right regulated under copyright laws. Although this is not a resale right literally, digital artists reach the same outcome as the use of resale right via NFTs.
Blockchain is a distributed database where all kinds of data can be recorded securely thanks to cryptographic protocols, without resorting to intermediaries like banks or other financial institutions. There are three main features of blockchain. First of all, it is distributed, meaning that data are not stored centrally, but all the nodes in the blockchain have access to and a copy of the record. There is no central control mechanism like a state or a central network. Secondly, blockchain is transparent. This does not mean that the content of information stored on the blockchain is shared with everyone on the network (‘the nodes’). However, nodes can trace every transaction made on the blockchain. As a result, the data contained in a block securely chained to the previous blocks cannot be altered afterward. Finally, blockchain is verifiable on account of the consensus mechanisms. The concept of trust that we place on intermediaries in our everyday transactions is replaced with trust in the system, which is based on the consensus reached by the nodes operating on a particular blockchain. Because the blockchain is tamper-proof and permanent, there are several countries working to keep their land registry on the blockchain; soon, it might even be possible to buy and sell tokenized immovable property.


5 For different types of consensus mechanisms see Szołot (n 4) 48; Gyr (n 1) Nr 65; Gatteschi, Lamberti and Demartini (n 4) 41; M Kianieff, Blockchain Technology and the Law Opportunities and Risks (Routeledge 2019) Nr 3.1; Hanzl (n 2) 22.

A. Digital units on blockchain: tokens

The main goal of Bitcoin was to create an alternative payment mechanism by removing intermediaries and reducing transaction costs. Bitcoin was successful in reaching this goal but, since the establishment of the Ethereum blockchain, blockchain has been also used for carrying out transactions, programming contracts and deploying decentralized applications.8

Enter tokens: The concept of a token is not exclusive to blockchain. Tokens have been used for securing digital transactions historically, especially banking transactions.9 Today, tokens are one of the most important uses of the blockchain technology. They are seen as 'central to most social and economic innovations developed with blockchain technology.'10

Technically, tokens are digital information units in the form of lines of computer code. These codes state what the token represents. From a legal point of view, tokens are digital assets that can virtually represent any value that people have agreed on and they are secured by cryptographic protocols. In the blockchain, rights and assets are represented by tokens. Assets from the real world or virtual world can all be tokenized. This means that, practically, houses, cars, commodities, loyalty points or company shares can all be tokenized.11 In addition to this, lottery tickets or the skills of a character in an online game can be tokenized as well.12

There is no internationally recognized categorization of tokens. Each country endorses a different distinction when it comes to tokens. However, we generally come across the following tripartite distinction: payment tokens, utility tokens and a third group, whose name varies (asset, security, equity or investment tokens). Payment tokens are used as a means of payment for acquiring goods or services. Cryptocurrencies are prominent examples. Utility tokens provide digital access to an application or service, like entering a network or platform and using it. Asset (security, investment, equity) tokens are the third group, which digitally represent assets, company shares, securities or investments. Security tokens grant their holders similar rights as securities. In most countries, tokens, which are clearly not regarded as utility or payment tokens are generally classified as security tokens.14 The legal nature of tokens and where they should be placed in property law is debated among legal scholars.15

B. NFTs: Unique and valuable digital assets

1. Fungible vs Non-Fungible

Tokens are subjected to another distinction with regard to their fungibility. There are fungible tokens, a classical example being a payment token like the cryptocurrency Bitcoin or Ether. The fungibility of a token refers to the fact that the token has the same content compared to other fungible tokens.16 Therefore, fungible tokens are interchangeable/replaceable/exchangeable with, or equal to, another asset of the same category.17 Therefore, they are not unique. NFTs, on the contrary, are unique or scarce (rare) and cannot be replaced; this is why they are valuable.18

A payment token is always fungible (i.e. exchangeable, divisible and not unique). An asset token, which represents the ownership of an asset, can be fungible or non-fungible, depending on the circumstances of how that specific token was created.
Although fungible tokens have become the common use of tokens in the blockchain, NFTs have started gaining popularity in the Ethereum blockchain, especially since 2017. With NFTs, non-fungible assets like digital art, digital collections, online games, tickets, social media shares, domain names, music files and other different kinds of digital content can be tokenized. As one can see from the examples, NFTs can be used to represent unique digital assets that exist online. In these cases, NFTs are tied to the digital asset by cryptographically associating the token with the digital asset. NFTs can also represent assets in the physical world, such as a painting displayed at an art gallery or real estate. In each case, blockchain enables the network participants to track the ownership and transaction history of NFTs.

2. NFTs and smart contracts

Smart contracts are the heart and soul of cryptocurrencies and other tokens. Nick Szabo first used the term ‘smart contract’ in the early 1990s before the emergence of blockchain. He defined smart contract as a computerized transaction protocol that executes the terms of a contract. Although a unified definition of smart contracts does not exist today, they can be described as computer codes, which, upon the occurrence of certain conditions, execute transactions on the blockchain automatically (ie without the intervention of the parties to the transaction). Smart contracts can execute much more complicated transactions than transferring cryptocurrencies, such as establishing decentralized autonomous organizations or initiating security token offerings.

NFTs are written and stored in smart contracts. The smart contract for an NFT will define the basic terms of sale. The fungibility of a token in Ethereum blockchain depends on the smart contract technical ERC25 (Ethereum Request for Comments) standard that is applied to it. If an ERC-20 standard is applied, we are dealing with a fungible token. An ERC-20 token is the same as an ETH (Ether) in the sense that one token is, and always will be, equal to all other tokens.

If an ERC-721 standard is applied, then we are dealing with NFTs. Contrary to ERC-20, with the application of ERC-721 standards, a token may not be equal to other tokens or have a different value than the tokens from the same smart contract. This is because digital content is linked to a single token in a smart contract. This mechanism results in only one person owning that unique/particular token, which confirms their ownership; other people can only have a copy of the same content.


25 ‘ERC-20 Token Standard’ (n 12).


29 ‘ERC-20 Token Standard’ (n 12).

With the use of smart contracts, NFTs do not only function as a tool for ownership and transferability. Smart contracts can be programmed to link the NFT to another digital asset or to automatically send a royalty paid for any subsequent sale of the NFT back to the original owner.\textsuperscript{31, 31}

3. The rise of NFTs

The concept of NFTs started to gain the attention of the blockchain community especially with the deployment of the NFT Standard ERC-721 on the Ethereum blockchain. Until then, the ERC-20 standard was being used for smart contracts concluded on the Ethereum blockchain. A game called ‘CryptoKitties’ used ERC-721 protocol for the first time. In it, there were unique virtual cats being tokenized and sold. Eventually, this market for CryptoKitties was making up most of the transaction volume of the Ethereum blockchain.

But, the NFT craze began with two major sales, which both happened in March 2021.

First, Mike Winkelmann (aka Beeple) sold his digital art, \textit{Everydays: The first 5000 Days}, for an ETH equivalent of USD 69 million through the digital branch of the famous art auction platform called ‘Christie’s.’\textsuperscript{32} Winkelmann’s NFT is a jpeg file of a digital collage of 5000 images created daily by him from 2007 through 2021; it was minted\textsuperscript{33} in February 2021. The buyer of this NFT received a gigantic jpeg file and a unique piece of Ethereum blockchain code. The NFT did not include copyright ownership of the art piece.

Then, on 22 March 2021, the founder and CEO of Twitter, Jack Dorsey, sold his first tweet from 2006 as an NFT on the platform ‘Valuables’ for an ETH equivalent of 2.5 million dollars. The buyer received a digitally signed and verified certificate prepared by Jack Dorsey and the metadata of the original tweet, which includes when the tweet was posted on Twitter and the contents of the text. The buyer compared the value of this tweet to the famous painting \textit{Mona Lisa}.\textsuperscript{34}

4. Why are NFTs believed to represent the future?

Documents showing ownership, IP rights, licenses, trade marks, patents and deeds can be recorded on the blockchain permanently in an NFT format. Since NFTs are operating on the blockchain, ownership rights and the validity of the transactions can be easily traced.

In addition to the recording function, when you buy an NFT you can store it in a digital asset wallet\textsuperscript{35} and share it virtually. You can display your NFT and show the world that you own that NFT. It might even be thought of as, ‘You carry the work you have bought in your pocket.’

NFTs might function to provide a sense of authenticity to digital art in terms of creating a ‘digital original’ and making blockchain a powerful tool to protect artists’ rights: digital works of art can be easily copied and, unlike physically created works of art, the copies are exactly the same as the original. So, with the use of blockchain technology, something digital can also be something unique. Since NFTs are functioning on the blockchain, digital value transfer can be realized completely digitally and faster without intermediaries. As a result, the true origin of art pieces can be protected in a reliable way.\textsuperscript{36}

With NFTs, it is possible to own a percentage in a certain artwork. If a physical asset, such as a painting, cannot be split into parts or pieces, tokenizing that asset as an NFT could enable the granting of partial rights to the NFT owner.\textsuperscript{37} It is technically possible to tokenize \textit{Mona Lisa} and distribute parts to several buyers.

Finally, it is also highlighted that NFTs could create a potentially useful ‘online canvas’,\textsuperscript{38} although not a literal one, for digital artists to share a new genre of performative artworks.

III. Legal implications of NFTs

A. General points

NFTs raise some legal questions, just like the other tokens. Some of these questions are similar to the problems that arise from carrying out a transaction using smart contracts, since NFTs are operating on smart contracts.

First, there is the usual question of how and where the legal disputes arising from the creation and use of

\textsuperscript{31} Mahmood, Naftalis and Ye (n 24).
\textsuperscript{33} Minting an NFT is the coding of the underlying smart contract to determine the qualities of the NFT and adding these determining qualities to the blockchain on which the NFT is created. Mahmood, Naftalis and Ye (n 24).
\textsuperscript{35} To store NFTs, MetaMask, which is a communication provider for Ethereum is used. Using this browser extension, users can manage their identities on different sites and sign their transactions. See ‘Non-Fungible Tokens From a Legal Perspective’ (Iuricorn, 26 February 2019) <https://www.iuricorn.com/non-fungible-tokens-from-a-legal-perspective> accessed 17 April 2021.
\textsuperscript{36} Cohen and others (n 30).
\textsuperscript{37} D Qiao, ‘This Is Not a Game: Blockchain Regulation and Its Application to Video Games’ (2020) 40(2) Northern Illinois University Law Review 176, 221.
NFTs will be resolved. Due to the anonymity or pseudonymity of blockchain and the lack of conflict of law provisions, it is challenging to determine where a lawsuit would be filed and what the applicable law would be. When an NFT is created on a public blockchain like Ethereum, everyone can see how it was developed and linked to the underlying right or asset. Although it is possible to see the NFT owner’s/creator’s wallet address and the metadata linked to it, it is not enough to match these with the real-life owner or creator.

Secondly, there might be some problems arising from form requirements. NFTs are operating with smart contracts that verify their ownership and manage their transferability. Fulfilling form requirements in smart contracts is a problematic issue, especially in cases where the law foresees that a transaction be carried out in a written form that includes the signatures of the parties. The problems associated with NFTs are quite similar to the problems on form requirements arising from the use of smart contracts. It should not be forgotten that people carrying out transactions on blockchains via smart contracts must also abide by legal norms; smart contracts are not above the legal systems and need to comply with the rules of contract law.

Thirdly, not everything about the NFT can be coded in the smart contract. For instance, if the seller of an NFT wants to introduce a contractual term, which prohibits buyers from using the underlying work of art for commercial purposes, such a term cannot be enforced by smart contracts. Although smart contracts are smart to an extent that makes them self-enforcing, these kinds of clauses cannot be evaluated, and therefore, operated by the smart contract. Therefore, if the seller would like to impose such an obligation on the buyer, traditional methods like demand letters and litigation have to be used.

The fourth problem is about the possibility of classifying NFTs as security tokens. Although NFTs are non-fungible and generally associated with art or digital work (which are not regarded as securities), some authors claim that there is a potential for them to be considered a security, such as an investment contract. For instance, in cases where a company issues NFTs that represent different percentages of stake in the company but none of the stakes are the same, the NFTs will most likely pass the Howey test applied by the SEC in the USA. The decisive factor here would be the bundle of rights associated with the NFT and its sales and promotion.

Fifth and most important, since we are dealing with ‘unique’ and ‘authentic’ items such as digital art and music when we are transacting with NFTs, a variety of copyright law questions also come to mind.

B. Copyright law issues

The technical features of the standard used in NFTs, namely ERC-721 standard, should be mentioned in greater detail in order to understand the copyright issues more clearly. This standard only provides mapping of the digital content to the creator of NFT and the digital content to be transferred. The digital content is represented in the NFT as for example token ID (unit 256). So, where is the digital content? At this point, one needs to make the distinction between on-chain and off-chain NFTs.

The underlying content and the metadata are uploaded directly into the blockchain in on-chain NFTs. Therefore, both are stored on the blockchain. They are not stored in other hosts so there isn’t any risk of not being able to access it due to problems arising from the host (such as blocking of the hosting website or deleting the content by the host or the creator). Sometimes only the metadata is uploaded on the blockchain. There are not sufficient advantages of on-chain NFTs for them to become popular and common because of the one huge obstacle, namely, storage limitations and costs of uploading.

Due to these obstacles, off-chain NFTs are preferred. Contrary to the on-chain, in this type of NFTs neither digital content nor the metadata is stored on the blockchain. How, then, is this content and the metadata represented in the NFT? A method used to eliminate this problem is the ‘tokenURI method’, which returns a public URL. There are some ways to store data of

39 See G Rühl, ‘Smart (Legal) Contracts, or: Which (Contract) Law for Smart Contracts?’ in B Cappello and G Carullo (eds), Blockchain, Law and Governance (Springer 2020) 159ff.
41 Koonce and Sullivan (n 19).
42 For the analysis of the current situation in Germany, see Kaulartz and Schmid (n 16).
43 Qiao (n 37) 221.
48 Guadamuz (n 46).
49 See https://www.technollama.co.uk/what-do-you-buy-when-you-buy-an-nft/.
content through both centralized servers (such as clouds or interplanetary file system (IPFS), which is a system similar to P2P). If data are kept on a centralized server, the developer can always change the metadata or the content. Furthermore, there is always the risk of not being able to access the content due to either the creator of content or the server.\(^\text{49}\) In that aspect, decentralized systems like IPFS seem more trustworthy.\(^\text{50}\)

After clarifying the difference between on-chain NFTs and off-chain NFTs, copyright law issues can be introduced. Before beginning, it should be mentioned that there are lots of copyright questions stemming from the NFTs.\(^\text{51}\) However, we are going to focus primarily on the ones below, which mostly concern the qualification of minting and selling and the consequences of purchasing an NFT.

1. Is minting and selling an NFT a digital performance and therefore an artistic work?

When Jack Dorsey famously sold the NFT of his first tweet, it sparked the debate of whether minting and selling content as an NFT can be regarded as work or not.\(^\text{52}\) The first sub-question that comes to mind is whether tweets are copyrightable. This question is reminiscent of the discussions regarding the copyrightability of tweets in the early 2010s. The answer depends on the requirements of a copyright, especially the requirement of originality. From the point of EU law, for a tweet to enjoy copyright protection, it should be an expression of author’s own intellectual creation which means that it should reflect the author’s personality as an expression of her free and creative choices and the tweet should be expressed in a sufficiently precise and objective form.\(^\text{53}\) Let’s have a look at the first tweet: The expression, ‘just setting up my twttr’, seems like a general statement; therefore, it does not reflect the author’s personality and this tweet should not enjoy copyright protection.

However, the issue is not the tweet itself and we should not focus on its 24 characters. The issue here is the minting of an NFT file underlying the screenshot of the first tweet and the selling of it. Can solely minting an NFT be considered a digital artistic performance and thus an artwork? Or can the whole act be considered a digital artistic performance and thus an artwork?\(^\text{54}\)

There is an argument that claims minting an NFT is an artistic performance, even though it is the digital equivalent of Duchamp’s *Fountain*.\(^\text{55}\) But can we compare this to Duchamp’s *Fountain*? As is well known, Marcel Duchamp submitted an upside-down urinal signed with the name R. Mutt to the opening of the Society of Independent Artists. Although it was not rejected by the Society, it was hidden during the exhibition.\(^\text{56}\) At that time, it was debated whether Duchamp’s work was an artistic work or not. However, now he is seen as one of the greatest artists of the 21st century and his pieces of art are accepted as milestones. Instead of making new paintings or sculptures, the creative process in his art is to give a new meaning to an existing object (such as a urinal). Even the choosing of the object is deemed artistic creation.\(^\text{57}\) Therefore, choosing a porcelain urinal among numerous manufactured objects, calling it *Fountain* and submitting it as an artistic work represents his personality in this concrete case.

One may argue that the perception of art has been changing, and that these kinds of presentations will be considered artistic work and are the traces of a new artistic movement.\(^\text{58}\) In that aspect, law always responds to the needs of artistic world. Sometimes it responds well, and sometimes this response is not enough, like in the example of the Koons’ art.\(^\text{59}\) Time will show...
whether minting and selling an NFT will be considered a protectable artistic work or not. However, even if it is accepted as artistic work, this protection does not prevent others from minting their tweets and selling them due to the idea/expression dichotomy. Indeed, Jack Dorsey’s tweet is sold on a platform that is a marketplace for NFTs created by tweets.60 This is a new art movement, and the advantages of it will probably accelerate digital art (which itself may have a new name, crypto art). We agree that Andy Warhol would have minted his Campbell’s Soup as an NFT, if he were alive today. But these arguments do not mean that minting and selling an NFT in itself is a protectable artwork; it can only be a new movement.61

2. Does minting a work constitute copyright infringement?

In order to find an answer to this question, we should again focus on what an NFT is. Guadamuz explains the steps of minting an NFT in detail. An NFT does not include the original version of the content, it is a digital content which is compiled with the standard contracts and as a consequence of this compilation the unique metadata is produced which can be written to the blockchain.62 So, an NFT is metadata representing the underlying work and pointing where it is,63 or just a tokenized version of the work.64 It is just a digital receipt65 linking the original content like a deed (a record of ownership of a house).66 Although the content is used for minting an NFT, an NFT itself is not a copy of the content.67

In order to discuss the issue of infringement, it should be determined if minting an NFT constitutes an act of reproduction or communication to the public. In light of this information, here is the question: Can we consider minting an NFT an act of reproduction or a communication to the public?

Unless the work itself is communicated to the public, it would be difficult to consider that minting an NFT could constitute communication to the public.68 At this point, we can go back to the distinction of on-chain and off-chain NFTs. If the NFT includes the work, it would be easier to conclude that the whole act is a communication to the public. However, if it does not, it would be hard to reach that conclusion with off-chain NFTs. It is without a doubt that the underlying work is associated with the NFT; however, this association is mostly established by a public URL, which points to the address of the original work.69 Can we consider this action, namely giving a public URL, to be linking? When we handle the issue from a European law perspective, the leading authority remains the Svensson decision of the Court of Justice of the European Union (CJEU).70 Linking to content that is freely available on another website was accepted as an act of communication; however, the new public condition was not met. The communication was addressed to the same public, namely all potential internet users, and this was considered in the initial communication.71 Since 2014, the CJEU jurisprudence on linking has been evolving and becoming more complicated. Linking to the content which is published without the consent of the author was dealt with in the GS Media decision. The CJEU set forth the complementary criteria such as whether the provider knows or ought to have known that the content is communicated illegally.72 In addition to this, the CJEU stipulated a rebuttable presumption that if the link provider is providing the link with the aim of making profit, he/she should have known that sharing the content is illegal.73 If one adopts the idea that giving a URL is linking, the following conclusions can be reached: In the first scenario, the URL points to a website where the work which is freely accessible is published with the consent of the author. In this scenario, infringement will not occur considering both Svensson and BestWater74 decisions. In the second scenario URL points to a website where the work is published without the consent of the author. If the NFT creator knows or ought to have known that content was communicated illegally, the infringement of the right of communication to the public will occur. In addition to that, although the CJEU has not determined the boundaries of profit-making in those cases, creating an NFT for selling it will probably meet this condition. Therefore,

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61 Holms (n 38). Off-chain NFTs are taken into account in these conclusions. What about on-chain NFTs in which the original content is stored? Goldman drew attention to this point in his article. See Goldman (n 51). As long as NFTs are accepted as a digital receipt or digital copy of the work, it is hard to consider NFTs a work.
63 Giannopoulos and others (n 50).
64 Guadamuz (n 62).
65 Holms (n 38).
66 Goldman (n 51).
68 Guadamuz (n 62); Lapatoura (n 67).
69 Finzer (n 45); Lapatoura (n 67).
70 Judgement in C-460/12 Svensson Sten Sjögren, Madelaine Sahlin, Pia Gadd v Retriever Sverige AB Case, ECLI:EU:C:2014:476.
71 Ibid, paras 14–32.
73 Ibid, para 51.
the right of the communication to the public will be infringed unless the NFT creator proves the contrary.

Several complementary criteria, such as an alleged infringer’s knowledge of the unauthorized content, an alleged infringer’s intention to make a profit\(^{75}\) and the technical\(^{76}\) and contractual restrictions\(^{77}\) of the content are now considered by the CJEU. While new criteria are being added constantly, some scholars clarify their complexity by using tables\(^{78}\) or flowcharts.\(^{79}\) Therefore, liability arising from linking is a complex issue where multiple factors are considered. Other features stemming from NFTs make the subject even more complex. The first is: Can everyone access the server or system where the work is located? Secondly, is the URL a clickable link that directly connects the user to the work, or does the user only see a URL address? If the work is not accessible and the URL is not a clickable link, how can one interpret this as communication to the public? Therefore, trying to deal with the issue under the copyright liability of linking will be useless. Furthermore, it is not reasonable to handle a controversial issue in the scope of another controversial issue.

Can we consider the minting process something that falls within the scope of the reproduction right? In the end, only the metadata associated with the work is communicated to the public; therefore, it may be difficult to consider it a communication to the public. While the underlying work is never communicated to the public, the reproduction occurs during minting an NFT. When the work is minted without using a platform (such as opensea or niftygateway), you have to compile the digital copy with the smart contract.\(^{80}\) At this point, the personal use argument may be asserted. However, if you are going to sell this NFT in the marketplace, then this reproduction cannot be considered made for personal use; it is certainly made for commercial use. On the contrary, this situation does not change the fact that the original work was not reproduced in the NFT, especially in off-chain NFTs. Nevertheless, the ‘minting an NFT cannot be possible without reproducing the original work’ argument can still hold a place at the table.

In sum, it will be hard to qualify the act of minting as an act covered by the copyright. On the contrary, if not covered, this technological innovation is going to harm the authors and copyright holders, especially if their works are minted without their consent. The qualification of minting an NFT from a copyright law perspective is important in finding an answer to several sub-questions (as follows).

a. Minting a third party’s work as an NFT

The question here is: ‘does minting a third party’s work constitute a copyright infringement?’ If minting is considered as reproduction or communication to the public, the answer is going to be yes. However, if it is not, then we cannot talk about copyright infringement as it is discussed above.

NFT platforms enable their users to mint or create an NFT and to sell them in the marketplace. When the steps of the minting process as provided by these platforms are considered, it will be apparent that users upload their files (including content such as digital art, videos or photographs). After the files are turned to an NFT, the digital content is made available to the users’ account and on the platforms’ website. In addition to the metadata, the properties and chain information (the image or the video underlying the NFT) are also accessible.\(^{81}\) In this aspect at least, it can be accepted that making these images or videos available without the consent of the author can be considered an infringement of copyright. In addition, if the work of a third party is represented as a work of the creator of the NFT, it is beyond dispute that the right of attribution is infringed.\(^{82}\)

b. Minting of an NFT by the owner of the physical work

Owning a physical work does not mean that the author has transferred her copyright. The owner of the physical work cannot enjoy exclusive rights unless the author transfers or licenses these rights. She can enjoy the work only for personal use. However, there are some exceptions to this general rule. For example, there is a provision under Turkish law which states that artistic works can be displayed in public places by the owner or with the consent of the owner, provided that there is no indication on the artistic work that the owner clearly prohibits it.\(^{83}\) In other words, a physical painting or sculpture can be displayed even in public places unless the owner of the copyright clearly prohibits it.\(^{84}\)

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\(^{75}\) See GS Media (n 72) paras 49–53.

\(^{76}\) Svensson (n 70) paras 27–31; GS Media (n 72) para 50.

\(^{77}\) C-392/19 VG Bild-Kunst v Stiftung Preußischer Kulturbesitz, ECLI:EU:C:2021:181, para 39ff.


\(^{80}\) Guadamuz (n 62).

\(^{81}\) See Opensea <https://opensea.io/assets/0xdfef5ac9745d24db881fe3937eab1d2471de2c71/> accessed 17 April 2021.

\(^{82}\) Guadamuz (n 62); Giannopoulou and others (n 51).

\(^{83}\) art 40/2 Law No 5846 on Intellectual and Artistic Works.

\(^{84}\) The owner does not have a right to display the sculpture in public according to the Spanish case law. Further information for the decision of Madrid Provincial Appellate Court no 13/2010 of 22 January 2010. See
Otherwise, the owner cannot enjoy exclusive rights. In sum, the owner can only enjoy copyright within the statutory limits unless the author gives permission.

If minting an NFT is covered by one of the exclusive rights of copyright, we can easily conclude that only the author can mint his/her piece of work unless he/she transfers the exclusive rights. Otherwise, the following conclusion must be reached: while copyright law only allows the owner of a physical work to resell it, and copyright law does not allow the owner to rent a painting, reproduce it, or print it on t-shirts and then sell it, minting and selling an NFT in marketplaces without the permission of the author the can be possible according to copyright law.

c. Minting an NFT by the licensee of a physical work

The situation is less complex in this scenario. Licensees have only the rights written in the license agreement. Even if the licensee has the right of reproduction and communication to the public (the ‘making available right’), one can argue that this kind of usage would be unknown when the license contract was concluded. Therefore, the author retains this right. However, this approach can only be useful for jurisdictions, which restrict transferring rights for new forms of uses. Kaulartz and Schmid draw attention to this issue in their work.

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d. Minting a work in the public domain as an NFT

Everyone has the right to enjoy works in the public domain. Therefore, everyone can create an NFT using a work in the public domain. But is it possible to mint one which has already been minted? Although the core feature of the NFT is uniqueness, it does not mean that minting an NFT grants the creator a right to prevent others from using the same work to mint an NFT.

Minting the Mona Lisa does not make the creator of the NFT the owner of the Mona Lisa. In line with this, when OpenSea, one of the most popular marketplaces for NFTs, is checked, one can see that there are 3,423 NFTs of the Mona Lisa. However, if the derivation of a work in the public domain is minted, this should be considered minting a third-party work without consent.

3. Which rights are granted to the buyer when an NFT is purchased?

The action of buying a physical painting does not grant the buyer the copyright. Likewise, when someone buys an NFT, she does not own the copyright to the underlying work. The following analogy is used to clarify the issue: While buying a physical painting gives the new owner the right to display it, buying an NFT should grant the buyer the right to show it in her wallet. Thus, displaying an NFT in that context is not going to be a copyright problem. The above-mentioned ‘you carry the work you have bought in your pocket’ function of the NFT has been fulfilled.

It should be emphasized that underlying content can still be distributed. Purchasing an NFT does not grant the owner a right to prevent further use of the underlying work. Bailey’s comparison of purchasing an NFT to purchase a limited number of signed posters clarifies the issue. The seller can continue to sell the posters, and the new owner of the limited poster cannot prevent it. Does the new owner then have the right to prevent the seller from releasing new editions of limited-signed posters? This is the other controversial question arising from NFTs; new NFTs of the same work would probably decrease the value of the first edition. The same concern is valid for physical artistic works too, especially photographic works. According to Guadamuz, the Sobel v Eggleton case can be considered here. In this case, subsequent editions were made through a digital scan of the negatives; although they were based on the same images, they were different in size. The owner of a photo from the first limited edition went on to sue the artist, claiming that subsequent editions decrease the value of the first photographs. The rule in the physical world is applicable to this situation; however, it would be better to regulate this issue under the license agreement.

Although buying an NFT does not enable the buyer to enjoy the exclusive rights, it does not mean that the owner or holder of the copyright cannot grant the buyer a license to make certain uses of the work.
licenses\textsuperscript{93} have been issued already solve this problem.\textsuperscript{94} This license was first issued on June 2018\textsuperscript{95} by Dabber Labs, a Canadian company, which develops games on blockchain (such as CryptoKitties). This license is like the creative commons (CC) license, which was designed for use by everyone.\textsuperscript{96} The rights are determined in a very simple way in an NFT license. Purchasers of NFTs can copy, display, resell, and even use the content for commercial purposes (not earning more than USD 100 000 in yearly gross revenue) according to this license agreement. Instead of NFT licenses, marketplaces use their own terms of use or license agreement. One example is Makersplace, which is also an NFT platform.\textsuperscript{97} Unlike the NFT license, a license agreement of Makersplace does not give permission for commercial use. It only allows purchasers to use, distribute, display and resell the NFTs.\textsuperscript{98} Similarly, commercial use is not allowed according to the terms of use of Yellowheart, where the NFT of the new Kings of Leon album was sold.\textsuperscript{99} In sum, there is not one unique license agreement used for regulating rights; therefore, buyers should be very careful on this issue.

In addition to the right of use, one more issue should be regulated under license agreements. Underlying works/contents are stored in other hosts in off-chain NFTs, and hosting is not a free service, so who should bear the costs of hosting? The lack of clarity on this issue in license agreements is a problem. Likewise, what if a work is deleted or somehow removed from the host or is changed by the author?\textsuperscript{100}

4. What are the impacts of the features of authenticity and scarcity on the copyright?

NFTs are unique and scarce\textsuperscript{101} because they have a unique ID and other metadata that cannot be replicated by another token.\textsuperscript{102} Uniqueness is important, especially for digital works that can be copied easily and exactly. With this feature, digital art comes closer to the physical art. However, it is argued that uniqueness should not be valued too much, due to the fact that an author can always create another NFT underlying the same work\textsuperscript{103} in the same blockchain or in a different one\textsuperscript{104}; it is always possible to mint an illegal copy of a work and present it as the original.

NFTs can be explained through the trading card example. Contrary to the physical trading card, NFT collectors do not have to research the features or circulation of the NFTs. In NFTs, all of this information is kept permanently in the blockchain.\textsuperscript{105} It is meant to be an advantage that allows creators to prove their ownership.\textsuperscript{106} As a matter of fact, proof of ownership is listed as one of the important features of NFTs.\textsuperscript{107} However, although some information (such as the date of the creation, the process including tools and effects and the transaction history) is stored in the NFT,\textsuperscript{108} it cannot guarantee that the creator of the NFT is the author of the work. NFTs cannot guarantee the originality of the underlying work either. Anyone can create an NFT using the third party’s work and make it available as their own or as the original author. Indeed, some platforms have started to use manual verification to prevent infringing activities.\textsuperscript{109} Furthermore, some companies have started to provide certification services for NFTs; thus, buyers can be sure that the NFT is created by the real artist.\textsuperscript{110}

5. Is it possible to be granted an unconditional right to resale?

One of the benefits of this system is that special conditions can be added to the smart contract when creating NFTs. The common example is the resale right. Although the resale right is regulated under article 14ter of the Berne Convention, it is not mandatory. Therefore, countries like the USA or China have not yet adopted it in their national laws. On the contrary, there are some strict requirements for getting payment from the resale of works, such as price or time limitations as stated in the Directive No 2001/84/EC.\textsuperscript{111} Visual artists

\textsuperscript{93} For the license agreement, see ‘NFT License’ <https://www.nftlicense.org/> accessed 17 April 2021.
\textsuperscript{94} TM Evans, ‘Cryptokitties, Cryptography, and Copyright’ (2019) 47(2) AIPLA Quarterly Journal 219, 252.
\textsuperscript{95} Version 2.0 was issued on 5 November 2018.
\textsuperscript{96} Evans (n 94).
\textsuperscript{97} Mesa (n 84).
\textsuperscript{98} For further information, see ‘Makersplace’ <https://makersplace.com/creators/> accessed 17 April 2021.
\textsuperscript{99} For terms and conditions of Yellowheart, see Yellowheart LLC Auction Terms (05 March 2020) <https://www.yellowheart.io/kol/terms_and_conditions.pdf> accessed 17 April 2021.
\textsuperscript{100} Giannopoulou and others (n 50); Mahmood, Naftalis and Ye (n 24).
\textsuperscript{101} Evans (n 94) 252; Bailey (n 91).
\textsuperscript{102} Mahmood, Naftalis and Ye (n 24).
\textsuperscript{103} Guadamuz (n 28).
\textsuperscript{104} This situation is compared to a city having two register land deed or two auction houses, each one claiming that they have the legitimate title to a piece of fine work. See JJ Roberts, ‘The NFT Craze Offers Easy Money—And Hard Copyright Questions’ (Decrypt, 13 March 2021) <https://decrypt.co/60394/nft-craze-easy-money-hard-copyright-questions> accessed 17 April 2021.
\textsuperscript{105} Mahmood, Naftalis and Ye (n 24); Hall (n 47).
\textsuperscript{106} Bailey (n 91).
\textsuperscript{108} Mesa (n 84).
\textsuperscript{109} Mahmood, Naftalis and Ye (n 24).
\textsuperscript{110} O Buck, ‘Cryptopaint, Artist Authentication and the “original work”’ (Lexology, 17 March 2021) <https://www.lexology.com/library/detail.aspx?g=c7c8fa2f-9d8e-4e19-a4e7-70a4a5a0dfec> accessed 17 April 2021.
are requesting law reform that would provide them with the resale right to receive a royalty each time their work is sold. This demand is addressed directly to the WIPO to adopt it as a mandatory right in a new international treaty. While the international copyright society is discussing this issue, NFTs provide the easiest way to get payment to visual artists.

If this royalty feature is added to the smart contract, the creator will be paid automatically. The ownership should be transferred in order receive a payment under the resale right. Only a few cases can meet this requirement. In addition to this, the resale right is generally granted for only limited work categories and the original or limited number of copies that are numbered, signed or otherwise duly authorized by the artist. However, these conditions do not have to be satisfied in the resale right agreed through the smart contract. Actually, standards like ERC-1190 or EIP-2981: ERC-721 Royalty Standard which enable the creators to receive royalties for each transaction have already been created.

In sum, it seems that the resale right discussed in the international copyright society may be achieved through NFTs. Thus, creators can receive a royalty when their NFT is sold, although the underlying content is not protectable under copyright. This is not an exclusive right granted by copyright law; it is only a contractual obligation. In other words, when there is an infringement arising from this resale right, it will not be also necessarily a copyright infringement.

IV. Conclusion

The NFT craze is snowballing day by day. While it is not known whether it will remain this insane or be permanent, it is beyond dispute that it has accelerated the creation of digital art and carried digital art to another dimension. However, NFTs should not be limited to digital art or even the art world. They will have some impact on real-life assets and result in their tokenization. Certainly, like every technological development, many questions and uncertainties arise from NFTs. The examples of minting protectable artistic works and selling them have led to copyright issues that need to be tackled. It is possible to clarify many of these uncertainties regarding copyright law with license agreements. However, the issue of whether minting, especially an off-chain NFT, falls within the scope of the right of reproduction or communication to the public remains controversial. It is also important to clarify some other copyright law issues related to the NFTs. Time will show us how these issues will be resolved and if the existing rules will be enough.

114 For these cases, see Giannopoulou and others (n 51).