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Metaverse, non-fungible tokens and intellectual property

This paper examines the main intellectual property (copyright and related rights) issues raised by the metaverse in general and non-fungible tokens in particular.

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1. Introduction

One of the characteristics of the metaverse is its configuration as a virtual world parallel to the physical one in which users, through their avatars, can carry out all kinds of activities. It is not surprising, therefore, that the metaverse constitutes a new space for the creation, dissemination and exploitation of all kinds of works and renditions susceptible of protection by means of intellectual property (understood in its strict sense as the sum of copyright and related rights). And this also explains why, together with the issues related to 'industrial property' - to which I have already paid attention in a previous paper[1] -, among the main legal problems that arise in the metaverse are also those related to intellectual property.

2. Metaverse, original creations and copyright protection

The design and implementation of a metaverse requires the use of specific computer programmes that give rise to the creation of the virtual world and the different elements that comprise it. And both these

[1] https://www.ga-p.com/wp-content/uploads/2022/04/Propiedad_industrial_metaverso_eng-2.pdf

programmes and the virtual realities generated by their execution may be subject to copyright protection or lead to acts of copyright infringement in respect of other people's works or renditions, existing outside the metaverse.

2.1. *The computer programmes involved in the functioning of the metaverse*

The creation of a metaverse requires the use of various computer programmes and applications necessary for it, and there is specific software for the design of virtual worlds. These programmes, as is well known, are protected by copyright, as provided for in the Agreement on Trade-Related Aspects of Intellectual Property Rights (Art. 10); in the World Intellectual Property Organisation Copyright Treaty (Art. 4); at the European level, by the current Directive 2009/24/EC, on the legal protection of computer programs, and, in our country, by the Copyright Act (Arts. 95 et seq.). In any case, the metaverse does not give rise to any kind of peculiarity or speciality in the application of this set of rules, as these computer programmes are protected in the same way as any other programme created for purposes other than those of the metaverse.

2.2. *Metaverse creations*

As a consequence of the use and execution of the different software involved in the metaverse, in particular the software for the design of the virtual worlds, different works protected by copyright can also be generated. This can happen with the spaces of the metaverse (buildings, squares, commercial premises, etc.) or with the avatars themselves.

The protection of this type of creation through copyright is different from the protection of software. In reality, what metaverse users perceive as a consequence of the execution of the computer programmes that create the metaverse is nothing more than a form of user interface. And, although there has been some doctrinal and judicial debate on the matter, the Court of Justice - in its judgment of 22 December 2010, C-393/09 - has resolved it by declaring that a graphical user interface does not constitute a form of expression of a computer programme and, consequently, cannot benefit from copyright protection for computer programmes. That does not, however, as the Court of Justice has also recognised, preclude such a graphical user interface from being eligible for copyright protection as a work, provided that the interface constitutes an intellectual creation of its author. It follows, therefore, that by using a virtual world design programme it is possible to create elements of that virtual world which, in turn, give rise to protected works. This will be the case, for example, with the design of an original space or character, so that they will be protected against reproduction, public communication or transformation by a third party, without it being an obstacle for this that the third party has used a computer programme with a different source code or object code.

In these scenarios, however, the problem arises of determining with whom the ownership of the works thus created will lie, bearing in mind that the ownership of the software does not necessarily determine the ownership of the works created using these programmes. There are, therefore, several possibilities:

— It may happen, firstly, that a company creates a closed metaverse, with no option for users to generate their own elements. In such a case, that company may be the owner of the virtual world design software and also of the various creations that the company generates using that software. But it is also possible for a company wishing to create a metaverse to commission a third party (owner of a design programme or authorised to use it) to do so. We would then be dealing with a manifestation of the creation of a commissioned work, so that it will be necessary to comply with the stipulations between the parties regarding the possible transfer of the rights to exploit the work thus created. It should be remembered that in Spain these contracts are governed, as well as by the clauses agreed between the parties, by the rules laid down for the specified-purpose contract and by the rules of the Spanish Copyright Act that are compatible with the commissioned work, including the general provisions on the transfer of rights in Articles 43 et seq. of the said statute. Finally, the general rules of contracting (Art. 1258 and Arts. 1281 to 1288 of the Spanish Civil Code) shall apply. And, on this basis, the courts understand that, in the absence of an agreement on the ownership of the work, there is a transfer limited to those pecuniary rights strictly necessary for the fulfilment of the purpose of the contract: *see*, for example, Judgment no. 494/2017, of 23 November, of the Barcelona Provincial Court (15th Chamber).

— Along with the above circumstances, in most cases the creation of the base metaverse is accompanied by the possibility for users to create new elements in the metaverse. This is due to the fact that in many cases virtual world development companies limit themselves to creating the base virtual world, integrating software that metaverse users can use to create their own objects. And it is precisely for this reason that contractual conditions that must be accepted before entering the metaverse usually provide that users grant the owner of the metaverse a licence over such user-generated content susceptible of protection; such a licence, as a general rule, is configured under conditions that are advantageous for the owner of the metaverse: it is established as an exclusive, perpetual, irrevocable, transferable and sub-licensable licence. Furthermore, it is also common for licence agreements to even contain a waiver of the author's non-pecuniary rights, although such a waiver will be void under Spanish copyright law, in which the author's non-pecuniary rights are expressly configured as unwaivable and inalienable.

2.3. *Copyright infringements in the metaverse*

The metaverse is not only a space for the creation of copyrighted works. It is also a space for the infringement of other people's rights.

Such acts of infringement may involve creations generated in the metaverse

(an avatar, an image decorating a room, etc.), which are reproduced, publicly communicated or unlawfully transformed by a third party in the same or a different metaverse.

But copyright infringement acts can also occur when a person uses in the metaverse, without due authorisation, creations external to the virtual world (such as a photographic, musical or audiovisual work, among others), which will imply acts of reproduction, public communication and, possibly, transformation of the protected work or rendition. Therefore, in order to avoid incurring in harmful acts, special attention must be paid in the licensing agreements to the uses intended to be made in the metaverse.

Moreover, in the case of an infringement of a third party's copyright, the same problems arise as when industrial property rights are infringed (and to which I have already referred in my above-mentioned discussion paper on industrial property in the metaverse): difficulties in identifying the perpetrator (especially in metaverses that do not require users to disclose a real-world identity); the existence of disclaimers by centralised metaverse owners or open metaverse managers, which have to be signed by users and which only produce *inter partes* effects; and the possibility for metaverse owners or managers to invoke the safe harbours or exemptions from liability provided in certain legislation, as is the case, in the European Union, of the 2000 Directive on electronic commerce and, in Spain, of the Information Society Services Act 34/2002 that transposes it, provided that they have no actual knowledge that the activity on the metaverse infringes the rights of a third party and that, if they do, they act diligently to remove the infringing content or access to it, with the consequent importance of the notice and takedown mechanisms laid down in many metaverses as a way of communicating the infringement and requesting the removal or blocking of the infringing content.

3. Non-fungible tokens in the metaverse: IP issues

As Reyes Palá explains in her paper "Metaverse tokens"[2] , among the different types of tokens used in the metaverse are non-fungible tokens (or NFTs), which consist of a unique digital representation of a specific digital element that is stored using blockchain technology and can be transferred and, therefore, traded. This is a type of token that can be generated and traded outside the metaverse (for example, in *marketplaces* such as Opensea), but which undoubtedly also find a fertile field of application and use in virtual worlds. In fact, two of the largest metaverses currently in existence, Decentraland and The Sandbox, already allow the exchange of this type of tokens.

The concept of non-fungible tokens or NFTs is raising many questions related to copyright law, some of which are discussed below:

3.1. *Can anyone own the intellectual property of a non-fungible token?*

In reality, a non-fungible token is nothing more than a computer code (a string of letters and numbers) that is created

[2] https://www.ga-p.com/wp-content/uploads/2022/03/Tokens_del_metaverso_eng.pdf

according to a technical standard and stored on a blockchain. Although there are different standards on different blockchains (BEP-721 on Binance Smart Chain, TZIP-12 on the Tezos blockchain, etc.), currently, most non-fungible tokens are created according to the technical standard ERC-721 (*Ethereum Request for Comments* 721), developed by Ethereum. According to this technical standard, a non-fungible token consists of at least two elements that make it unique: an identification number (the token ID) and a contract address, which allows it to be consulted in the blockchain registry.

The process of creating (or 'minting', which is the term commonly used) a non-fungible token is relatively simple and intuitive, thanks to various applications specifically designed for this purpose. In essence, it requires a digital file to which the token is to be associated. This digital file can contain a text, an image, a video, a drawing, etc. Anything that can be digitised can be used to mint a non-fungible token. But it is not the digital file itself that serves as the basis for its generation. The non-fungible token is simply a set of data or metadata on that file.

This being the case, it is easy to understand the difficulties in recognising copyrights over non-fungible tokens. Someone may claim ownership of a token, but not copyright, because its creation is the result of an automated process absent of a human creative process.

3.2. *Can non-fungible tokens be minted on the basis of copyrighted works or renditions?*

As indicated above, a non-fungible token can be minted on the basis of any digital file (including, therefore, those files that represent metaverse realities, such as, for example, a car for use by an avatar). Consequently, it is perfectly possible for a non-fungible token to be generated to represent a work or rendition in which a copyright exists, either because the work or rendition is digital (e.g. a digital photographic work or a mere digital photograph), or because the work or rendition is analogue, but is digitised prior to the minting of the non-fungible token (as would be the case if the paper copy on which the author has created a drawing is scanned).

In such cases, the token is the digital representation of a file containing a copyrighted work or rendition. But the non-fungible token itself is not the subject of copyright or any other related right.

3.3. *What happens when a non-fungible token linked to a protected work or rendition is minted without the permission of the copyright holder?*

It is technically possible to mint a non-fungible token on the basis of someone else's protected work or rendition. Consider, for example, the use of a third party's photograph or digital design or the use of a photograph of another's sculpture to mint such a token. Aware of this possibility, and in view of the pressure that users are exerting on applications in which non-fungible tokens are minted and traded, some of them have introduced prior control measures, by means of so-called *oracles*,

to try to prevent this. However, it is still possible to mint a non-fungible token on someone else's work or rendition.

In these cases, the question arises as to whether this type of conduct involves an infringement of the copyright protecting the work or rendition in question. The same question arises when it is the author of the work who mints the non-fungible token after having assigned the commercial exploitation rights. In fact, this type of controversy has already arisen in practice. One need only recall the conflict between the Miramax studio and the filmmaker Quentin Tarantino over the non-fungible tokens that the latter minted linked to unreleased scenes from the film *Pulp Fiction*, an act that the studio considers to be in breach of the assignment of rights agreement between the two parties; or the express prohibition by the Marvel and DC companies for their artists to mint and sell non-fungible tokens of the characters created for them.

When a non-fungible token linked to a protected work or rendition is minted without the rights holder's permission, there may be a copyright infringement as a result of the acts prior to obtaining a digital file on which to create the token. This will be the case, for example, if a physical work is scanned in violation of the author's reproduction right or if an unlawful digital copy of a work or rendition is obtained. And there may also be copyright infringement if someone else's digital work is modified to produce very similar creations on which the non-fungible tokens will then be minted.

Likewise, problems can also arise in the case of a lawful digital copy of the work or rendition, not so much because of the simple generation of the non-fungible token - because, in principle, this does not involve the reproduction of the protected property or any kind of transformation, since only a computer code linked to it would be generated - but because to obtain the metadata it is necessary to upload the digital file to a certain platform of non-fungible tokens, and at that moment a non-consensual act of reproduction would take place.

Similarly, an act of communication to the public of the protected work or rendition and, consequently, an act detrimental to the intellectual property of others may also take place if the non-fungible token incorporates a link to the work or rendition. As mentioned above, this type of token has a series of elements required by the ERC-721 standard. However, other optional elements can also be incorporated, including a link to the specific digital file linked to the non-fungible token. Consequently, the subsequent communication to third parties of such a token, in which the link to the protected work is inserted, may be considered an act of communication to the public that infringes the intellectual property of the work to which it refers. Admittedly, this is a novel case on which there is still no case law, but it is worth considering the application of the case law of the Court of Justice on internet links - established above all in its judgments of 13 February 2014 (*Svensson*, C466/12) and 8 September 2016 (*GS Media BV,* C160/15) so that consideration should be given to whether or not the linked

file is on the website with the consent of the copyright holder. In the first case, infringement may be considered to exist if the link gives access to the work to a new public that would not have access to it through other channels. On the other hand, when the work appears on the website to which the link is made without the consent of the copyright holder, it will be necessary to consider whether or not there is a profit motive on the part of the person providing the link, since, if there is (and in the world of non-fungible tokens everything suggests that this will be the case), it is presumed that there is an act of communication to the public.

3.4. *What are the intellectual property implications of the emerging phenomenon of non-fungible token replicas?*

Although non-fungible tokens are unique, it is possible to create a new token on the same item, which will result in several non-fungible tokens being linked to the same digital file. In fact, sometimes the author of a work decides to mint several non-fungible tokens on the same work. And sometimes it is unauthorised third parties who, there being only one token created by the copyright holder, mint new tokens. In these cases, we speak of copies of non-fungible tokens, and there are applications, such as NFT Replicas, specifically aimed at generating them. In any case, it is important to bear in mind that, in reality, these copies are different tokens (with different token IDs and contact addresses).

In accordance with what has already been explained, if the non-fungible token being copied is based on a work or rendition in which intellectual property rights exist, to the extent that the copying is accompanied by acts of reproduction, public communication or transformation of that work, there may be an intellectual property infringement in respect of that work or rendition. In fact, some of these applications are presented as a way to obtain the equivalent of an exact copy of your favourite work of art and allow you to obtain a copy of the file. But infringement will be determined by these additional acts and not by the fact that a new non-fungible token has been generated on that copy of the file.

3.5. *Does the transfer of a non-fungible token involve the transfer of intellectual property rights in the work used in its minting?*

Once minted, non-fungible tokens can be traded both in the metaverse and outside it, either on electronic trading platforms such as Opensea, or in the physical world, for example at auction houses. In fact, recently, the well-known auction house Christie's has joined the sale of this type of digital goods (note, for example, the auction of a digital work with a linked non-fungible token by the artist Beeple for 69 million dollars, or the auction of a collection of nine non-fungible tokens by CryptoPunks for 16.9 million dollars).

The transfer of non-fungible tokens is a growing reality, to the point that voices have been raised denouncing the existence of a bubble that will soon burst. In any case, and irrespective of such prognoses, one only has to look through the press to find examples of million-dollar transactions. This being the case, it is

easy to understand that, when a person acquires a non-fungible token linked to a copyrighted work or rendition, he or she may believe that he or she is acquiring the rights to exploit that work or rendition.

At first glance, one might think that whoever acquires a non-fungible token, sometimes paying an astronomical sum, would then be free to use and exploit at will the copyrighted work or rendition to which it is linked, for example, by displaying a digital image of the work on the wall of the commercial establishment he or she manages in the metaverse. But this is not the case, or at least not necessarily so.

Indeed, the transfer of a non-fungible token entails a change in its ownership that will be reflected in the blockchain ledger and this transfer may be governed by a smart contract whereby, each time the token is transferred, a portion of the price will automatically go to the creator of the token.

But the transfer of the non-fungible token does not imply the transfer of the right to exploit the work or rendition used to mint it and to which it is linked. And this is so even if the token has been minted by the copyright holder himself. Such a token, as mentioned above, simply consists of a series of metadata linked to a digital file. Therefore, its transfer only implies the transfer of the ownership of that metadata.

Therefore, the possible assignment of intellectual property rights and, in general, the determination of what the token holder may or may not do with the linked work or rendition are matters that should be regulated, should the parties wish to enter into such an agreement, in a contract or licence parallel to the sale of the non-fungible token. An example is the agreement accompanying the purchase of NBA Top Shots, which expressly provides for the granting of a licence to use the elements linked to the token, a licence which is expressly described as non-transferable and subject to other restrictions.

However, the existence of a parallel contract regulating the rights of the non-fungible token holder in relation to the linked work or rendition does not solve all the problems either, because the non-fungible token does not contain the content of any such contracts. Consequently, even if the IP owner sets out the restrictions and scope of the assignment in the contract with the first acquirer of the token, there is no guarantee that subsequent acquirers will be aware of it. It is true that a contractual obligation can be imposed on the first acquirer to disclose these details to subsequent purchasers of the non-fungible token, but it is quite feasible that this obligation will be breached. Precisely to try to mitigate these disadvantages, there is the possibility (implemented, for example, by Safe Creative) of incorporating in the non-fungible token a link to a website stored in a decentralised and unalterable system such as the InterPlanetary File System (IPFS), in which the authorship of the element to which the token refers, as well as the rights that the holder of a non-fungible token has over that work or rendition, are recorded.