

CRYPTO-ASSETS EMERGING REGULATIONS IN THE EUROPEAN UNION FRAMEWORK

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Abstract

This paper is about exploring legal issues concerning crypto-assets, namely cryptocurrencies and Non Fungible Token (NFTs), at a European Union scale, whether they are already addressed in draft regulations or not. At the same time, it will give explanations of the technical terms employed for a better understanding of these challenges which the student had the opportunity to analyze through her internship in an international law firm in Bangkok. Theoretical knowledge gained over her double Master's degree in European Union integration provided by the Autonomous University of Barcelona and the University of Toulouse 1 Capitole was also used as a basis for exploring those legal issues.

Resumen

Este trabajo tratará de explorar las cuestiones jurídicas que giran en torno a los criptoactivos, es decir, las criptomonedas y los NFTs o tokens no fungibles (Non Fungible Token, en inglés), a escala de la Unión Europea, tanto si se abordan ya en los proyectos de reglamento, como si no. Al mismo tiempo, dará explicaciones sobre los términos técnicos empleados para comprender mejor estos retos, que la estudiante tuvo ocasión de conocer mejor gracias a sus prácticas en un bufete internacional de abogados en Bangkok. Los conocimientos teóricos adquiridos a lo largo de su doble máster en integración en la Unión Europea, impartido por la Universidad Autónoma de Barcelona y la Universidad de Toulouse 1 Capitole, también sirvieron de base para explorar esas cuestiones jurídicas.

Resum

Aquest document té com a objectiu explorar les qüestions legals al voltant dels cryptoactius, és a dir, les criptomonedes i els NFTs o tokens no fungibles (Non Fungible Token, en anglès), a nivell de la Unió Europea, tant si ja s'aborden en projectes reguladors, com si no. Al mateix temps, explicarà els termes tècnics utilitzats per entendre millor aquestes qüestions que l'estudiant va tenir l'oportunitat d'entendre millor a través de les seves pràctiques en un despatx d'advocats internacional a Bangkok. Els coneixements teòrics adquirits durant el seu doble màster en Integració de la Unió Europea proporcionat per la Universitat Autònoma de Barcelona i la Universitat de Tolosa 1 Capítol també van servir de base per a l'exploració d'aquestes qüestions jurídiques.

Résumé

Ce document propose d'explorer les enjeux juridiques autour des crypto-actifs, à savoir les crypto-monnaies et les NFTs (Non Fungible Token, en anglais), à l'échelle de l'Union européenne, qu'ils soient déjà abordés dans des projets de réglementation ou non. Parallèlement, elle donnera des explications sur les termes techniques employés pour mieux comprendre ces enjeux que l'étudiante a eu l'occasion de mieux appréhender grâce à son stage dans un cabinet d'avocats international à Bangkok. Les connaissances théoriques acquises au cours de son double master en intégration de l'Union européenne dispensé par l'Université autonome de Barcelone et l'Université de Toulouse 1 Capitole ont également servi de base à l'exploration de ces questions juridiques.

Keywords: Crypto-assets; Blockchain; Proof-of-work system; Proof-of-stake system; Decentralization; Immutability; Cryptocurrency; NFT, Smart contract; Tokenization; Copyright; Resale right; Distribution right; Trademark law; Fungible.

Palabras clave: Criptoactivos; Blockchain; Sistema de prueba de trabajo; Sistema de prueba de participación; Descentralización; Inmutabilidad; Criptomoneda; NFT; Contrato inteligente; Tokenización; Derechos de autor; Derechos de reventa; Derechos de distribución; Derecho de marcas; Fungible.

Paraules clau: Criptoactius; Blockchain; Sistema de prova de treball; Sistema de prova de participació; Descentralització; Immutabilitat; Criptomoneda, NFT; Contracte intel·ligent; Tokenització; Drets d'autor; Drets de revenda; Drets de distribució; Dret de marques; Fungible.

Mots-clés: Crypto-actifs; Blockchain; Système proof-of-work; Système proof-of-stake; Décentralisation; Immuabilité; Crypto-monnaie; NFT; Contrat intelligent; Tokenisation; Droit d'auteur; Droit de suite; Droit de distribution; Droit des marques; Fongible.

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ABBREVIATIONS

AI - Artificial intelligence

ECB - European Central Bank

EU - European Union

CJEU - Court of Justice of the European Union

DAMUN - DIRECTIVE (EU) 2019/790 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 April 2019 on copyright and related rights in the Digital Single Market and amending Directives 96/9/EC and 2001/29/EC

DeFi - Decentralized Finance

GDPR - General Data Protection Regulation

IT - Information technology

JPEG - Joint Photographic Experts Group

MiCA - Proposal for a regulation of the European Parliament and of the council on Markets in Crypto-assets

NFT - Non Fungible Token

P2P - Peer to Peer

PoS - Proof of Stake

PoW - Proof of work

SEC - Securities and Exchange Commission

US - United States

VR - Virtual reality

1. INTRODUCTION

The emergence of new technologies is shaking our societies and reshaping our priorities in a globalized world with impact on collective and individual rights. We are witnessing many technological evolutions, among which Artificial Intelligence (AI), machine learning, cloud or 5G can be mentioned.

As we observe these evolutions, we acknowledge a lack of regulation on all the new technologies, because the legislator hasn't kept up the pace with them. But the public authorities have already shown concern and started to deal with the necessary regulations. Both, national and European or international law, must adapt to the evolution of new technologies. Definitions are the lifeblood of the law; they ensure predictability, hence the importance for a lawyer to understand the legal issues involved around new technologies. As stated in the directive 2019/790 known as DAMUN,¹

Rapidly evolving technologies continue to change the way works and other protected subject matter are created, produced, distributed and exploited. New business models and new players are constantly emerging. Legislation in this area must stand the test of time so as not to impede the evolution of technology. The objectives and principles defined by the EU copyright framework remain satisfactory. However, legal uncertainty remains for both rightholders and users with regard to certain uses, including cross-border uses, of works and other subject matter in the digital environment.²

Among these new technologies, blockchain and its underpinning crypto-assets will be the main topic. Blockchain may be a difficult word to grasp from its non-users, but cryptocurrencies and Non Fungible Token (NFTs) are crypto-assets depending on it that tend to be democratized. The consequences of the development of this technology are numerous and need to be regulated. We can speak of a continuation of the technological revolution that began in the 90s with the emergence of electronic commerce (e-commerce). Nevertheless, blockchain adds a dimension to this revolution (decentralization), which causes a disruption in the role of intermediaries in multiple relationships; between two parties to a transaction, between an artist and a collector, or more globally, in a classical contractual relationship.

¹ Directive 2019/790 of the European Parliament and of the Council of 17 April 2019 on copyright and related rights in the Digital Single Market and amending Directives 96/9/EC and 2001/29/EC, L 130/92, 17.5.2019

² (3) of the directive 2019/790 "DAMUN"

Although a cryptocurrency regulation has been initiated in several Member states of the EU,³ the need for the *sui generis* organization to get involved seems appropriate. We will see that the stakes for the EU are numerous because the applications of blockchain can have impacts in areas where it has the competence to regulate. In any case, a new approach is being claimed when observing the new regulatory framework which is being drafted at EU level,⁴ and will lead to a harmonization in this matter. Fabio Panetta, member of the Executive Board of the ECB, in an interview given to *La Stampa*, in May 2022, stressed on the urge for the European Union to start regulating crypto-assets. Actually, he underlined the fact that there is no reason for someone selling crypto-assets not to be subject to any taxation, when it is the case in every other sector. He also emphasized the need for regulation for transparency, public disclosure, and environmental issues.⁵

The topic of this paper is in line with the two months internship that I had the chance to do in Bangkok. While I was supposed to do an internship at the European Union Delegation in Bangkok, an unexpected event led me to do a different one in an international law firm called Vovan & Associés. This firm has been assisting individuals, companies and investors in Thailand for more than fifteen years and it is mainly composed of French lawyers.

It is important to know that, in parallel with the double Master's degree in European Union Integration, the European School of Law (ESL) university diploma given by the Toulouse 1 Capitole University, I'm preparing the fifth unit of which consists in solving a practical case submitted by a lawyer. This case study was essentially about blockchain applications, so I had the opportunity to familiarize myself with these new technologies and their legal implications earlier in the year. During my first interview with the firm's lawyers, it seems that M. Amoussou Guenou —Phd, lecturer at various institutes and universities in Thailand and Southeast Asia and senior partner of the firm specialized in international arbitration, Intellectual property law, and Personal Data Protection Law

³ HAMMOND, Susannah, EHRET, Todd “Cryptocurrency regulations by country”, Thomas Reuters 2022, available at:

<https://www.thomsonreuters.com/en-us/posts/wp-content/uploads/sites/20/2022/04/Cryptos-Report-Compendium-2022.pdf>

⁴ For now, we can mention Digital Services, Digital Markets and Artificial Intelligence draft regulations

⁵ ZATTERIN Marco “Interview with Fabio Panetta, Member of the Executive Board of the ECB”, [online] May 5, 2020, available from ECB website:

<https://www.ecb.europa.eu/press/inter/date/2022/html/ecb.in220505~c0c4aa67ab.en.html> (last accessed 26.05.2022)

(PDPA, in Thailand), among others— was interested in my profile. In fact, I particularly caught his attention when he noticed on my resume that I had this practical case about blockchain in progress. Then, he invited me to work with him on the preparation of a conference that he wished to conduct on NFTs with the French and English community in Bangkok. Indeed, Dr. Amoussou has been interested in the expansion of new applications of blockchain for several years now, which has allowed him to better consider its legal implications. He insisted on the importance for a lawyer to understand the legal challenges surrounding these new technologies. More generally, he emphasized the importance for everyone to understand what they consist of, as they will be part of our daily life —according to him— in the years to come. My mission was twofold: to help him explain to non-technical people and strangers to the world of blockchain what it consisted of through its applications, and to present its legal implications, with an emphasis on European law, since the conference was mostly addressed to French people.

The main topic of the conference was, actually, around NFTs. Nevertheless, M. Amoussou intended to explain to his audience what cryptocurrencies are, as being the chronologically first crypto-assets created based on blockchain. In fact, understanding more about them helps to assimilate the mechanisms of blockchain, and in the same way, to better integrate what NFTs are. That is why the first part of this paper will be dedicated to a presentation of cryptocurrencies and the draft EU regulations that may apply to them in the future. At the same time, it will allow to set the basis around main legal issues concerning blockchain. The second part will focus on the main crypto-asset I've been familiarized with through this professional experience: NFT, which can be presented as an extension of cryptocurrencies, although their function differs. Despite the obvious lack of regulation around NFTs, it will be necessary to note that EU existing laws may as of now be applied to them.

2. UNDERSTANDING BLOCKCHAIN TECHNOLOGY AND ITS LEGAL ISSUES THROUGH CRYPTOCURRENCIES

As mentioned previously, it's important to start this report with a chapter dedicated to blockchain, since NFTs are an application of this technology. However, there is no consensus around its definition, and it is rather through its uses that we manage to apprehend what this technology consists of. The first digital assets to be based on the

blockchain being the cryptocurrencies, it will be a question of understanding what they consist of and what are the legal problems they pose for the EU.

First, it's necessary to understand that a digital asset is a broad term that embodies three of the key concepts of this report; cryptocurrencies, NFT's and smart contracts. In fact, a digital asset is anything that is stored digitally and is uniquely identifiable that organizations can use to realize value. Examples of digital assets include documents, audio, videos, logos, slide presentations, spreadsheets and websites.⁶ Actually it embodies all sorts of digital support and is prior to blockchain technology. Thanks to the invention of blockchain, the creation of a digital value system (supported by crypto-assets) was born, as well as the creation of a digital transaction system (supported by smart contracts). Cryptocurrencies and NFTs are the most democratized crypto-assets. During the preparation of the conference, I was led to create a diagram that includes all this information and leads to lay the foundations in order to understand what the main applications of the blockchain are. (*Annex I*)

Crypto-assets are digital assets which use cryptography, peer to peer (P2P) networking, and a public ledger to regulate the generation of new units, verify the transactions, and secure the transactions without the intervention of any intermediate. Also, crypto-assets are referred to as “one of the major applications of blockchain technology in finance” in the Proposal for a regulation of the European Parliament and of the Council on Markets in Crypto-assets,⁷ “MiCA”. It is part of a comprehensive package of measures (the Digital Finance Package), enabling and supporting the potential of digital finance in terms of innovation and competition, while mitigating associated potential risks at an EU scale.⁸ In the case of MiCA regulation, it aims at setting a specific European framework for stablecoins and "virtual asset service providers" (VASPs). Stablecoins can be defined as “digital units of value that differ from existing forms of currencies (e.g. deposits, e-money, etc.) and rely on a set of stabilization tools to minimize fluctuations in

⁶ Definition from the website of gartner.com, [online] an American consulting and research company in the field of advanced technology, available in

<https://www.gartner.com/en/finance/glossary/digital-assets> (last accessed 21.05.2022)

⁷ Proposal for a regulation of the European Parliament and of the council on Markets in Crypto-assets, and amending Directive (EU) 2019/1937, COM(2020) 593, 24.9.2020

⁸ FERRIE Daniel, APOSTOLA Aikaterini “Digital Finance Package: Commission sets out new, ambitious approach to encourage responsible innovation to benefit consumers and businesses” (online) 24.09.2020, available in the official website of the European Commission

https://ec.europa.eu/commission/presscorner/detail/en/IP_20_1684 (last accessed 21.08.2022)

their price against a currency”.⁹ Crypto-assets are defined alternatively by an EU Directive¹⁰ as:

digital representations of value that are not issued or guaranteed by a central bank or public authority, that are not necessarily linked to a legally established currency, and that do not have the legal status of money or currency, but that are accepted as a medium of exchange by natural or legal persons and that can be transferred, stored and exchanged electronically.¹¹

Beyond their obvious lack of clarity, two elements stand out in these definitions: on the one hand, they negatively insist on the absence of assimilation of crypto-assets to legal tender currencies, given that the French Monetary and Financial Code states that "the currency of France is the euro",¹² whatever its form; is not negotiable. On the other hand, these definitions express positively the natively electronic nature of crypto-assets and their conventional nature, i.e., usable within a community or group.

Explaining what cryptocurrencies consist of, and more particularly Bitcoin, the best-known cryptocurrency, will help setting the basis concerning blockchain technology (1) in order to consider the main legal issues, it poses on a more general perspective afterwards. (2)

2.1. The creation of a crypto-assets as means of payment and store of value lodged on blockchain

State currencies are trusted because they are recognized by the State. Those are the known “fiat” currencies. Actually, fiat money refers as money without intrinsic value that is used as one because of a government decree.¹³ At the EU scale, the fiat currency is euro, since its introduction (January 1, 2002) has been possible through its founding act, the Maastricht Treaty.¹⁴ Such currencies started to predominate when the former president of

⁹ ECB Crypto-Assets Task Force, “Stablecoins: Implications for monetary policy, financial stability, market infrastructure and payments, and banking supervision in the euro area” Occasional Paper Series, No 247 / September 2020

¹⁰ DIRECTIVE (EU) 2018/843 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 30 May 2018 amending Directive (EU) 2015/849 on the prevention of the use of the financial system for the purpose of money laundering or terrorist financing and Directives 2009/138/EC and 2013/36/EU, OJ L 156/54, 30/05/2018, p.1-32.

¹¹ Ibid., (18)

¹² Article L. 111-1

¹³ MANKIW N. Gregory (2014). “Brief principles of Macroeconomics”, Cengage Learning, Seventh edition, 2014 p. 220.

¹⁴ See Report of the Euro Legal Tender Expert Group (ELTEG) on the definition, scope and effects of legal tender of euro banknotes and coins available at: https://ec.europa.eu/economy_finance/articles/euro/documents/elteg_en.pdf, p. 1-73.

the United States (US), Richard Nixon, announced the "temporary" suspension of the convertibility of the US dollar into gold. This decision, which has never been reversed, marks the definitive end of a monetary system guaranteed by gold reserves.¹⁵

In contrast with fiat currencies, cryptocurrencies are trusted because they are created by the users for the users.¹⁶ In fact, traditional trust comes from a third party. If one wants to make a money-transfer, for example, it is necessary for him to go through his bank. With blockchain, confidence in the realization of the transfer is based on computer technology, so that the person who initiated the transfer and the one receiving it don't need the bank to intermediate, so I can send a bitcoin (the world's famous cryptocurrency) by email.

A focus on Bitcoin will be given as blockchain technology origins are directly linked to it (A) before mentioning the emerging legal framework of cryptocurrencies in the EU (B).

A. Understanding the origins of Blockchain through Bitcoin, the best-known cryptocurrency

Even though there's a tendency to attribute the creation of the blockchain to Satoshi Nakamoto who proposed a cryptocurrency (Bitcoin) exchange facilitated by a distributed ledger system, the technology's genesis is a bit complex. In fact, Bitcoin was developed using open-source software. The blockchain software is the collaborative work-effort of numerous programmers worldwide. No one has power over Bitcoin anymore, even the creator of Bitcoin himself. And this is because although the blockchain is a transparent registry, accessible to all, it is a pseudonymous registry.¹⁷

Trying to understand the origins of blockchain through Bitcoin seems to be a fair approach, although "the blockchain technology underpinning Bitcoin has far greater technological implications".¹⁸ If we take the example of Bitcoin, we can understand that

¹⁵ COLLOMP, Florentin, "Il y a 50 ans, la fin de la convertibilité dollar-or", (online) 13/08/2021, Le Figaro, available at: <https://www.lefigaro.fr/conjoncture/il-y-a-50-ans-la-fin-de-la-convertibilite-dollar-or-20210813> (last accessed 13.08.2022)

¹⁶ FORTE Remi, Documentary "Le mystère Satoshi- Aux origines du Bitcoin", [online] 6 episodes, Arte, 2021, available at <https://www.arte.tv/fr/videos/097372-001-A/le-mystere-satoshi-aux-origines-du-bitcoin-1-6/> (last accessed 16.02.2022)

¹⁷ Ibid.

¹⁸ SPEARMAN Kelli, "Protecting Blockchain Investments in a patent troll world", [online], Journal Of Intellectual Property Law, Volume 26, Issue 1, Article 7, School of law of the university of Georgia, available at

nobody is an owner of Bitcoin based on the blockchain technology and nobody is identified to own the blockchain either.

Bitcoin is a cryptocurrency introduced in 2008. The main motivation was to create a universal currency that does not depend on a central bank or any central issuing authority. With Bitcoin, money exists mainly as computer code and is based on the trust of the users. One key element as previously mentioned is that it is based on blockchain technology.

Nowadays, we can actually list thousands of other cryptocurrencies aside from Bitcoin, that we name the alternative coins or “Altcoins” (Ethereum, XRP, Tether, Cardano, Polkadot, just to list a few). European officials have shown an increasing interest to start regulating them lately, realizing with their expansion that the legal issues posed by cryptocurrencies alone are multiple.

B. Emerging legal framework of cryptocurrencies in the EU and its benefits

The lack of regulation of cryptocurrencies seems indeed to be an issue in the EU legal framework. Christine Lagarde, President of the European Central Bank (ECB), reminded that the current regulatory framework, proposed under MiCA, focuses on financial intermediaries, such as banks, and does not apply to decentralized currencies, which is a matter that the European Parliament hopes to address in upcoming laws that would cover assets where there is no “identifiable issuer”.¹⁹

What’s more, a recent article was published among the headlines of the European Parliament's website dedicated to cryptocurrencies to raise awareness about the need to regulate these cryptocurrencies and the dangers they cause.²⁰

The consequences of these legislative gaps at EU level can be summarized in the fact that, on the one hand, there is a lack of harmonization in the understanding of cryptocurrencies in the different Member states, even in areas where the EU could

<https://digitalcommons.law.uga.edu/cgi/viewcontent.cgi?article=1440&context=jipl> (last accessed 04.06.2022)

¹⁹ BEGANSKI André “ECB President Lagarde: Crypto Staking and Lending Must Be Regulated” [online] Jun 22, 2022, available at: <https://decrypt.co/103565/ecb-president-lagarde-crypto-staking-and-lending-must-be-regulated> (last accessed 15.08.2022)

²⁰ “Cryptocurrency dangers and the benefits of EU legislation” [online], 01-04-2022, Ref.: 20220324STO26154, available in the news tab of the European Parliament website: <https://www.europarl.europa.eu/news/en/headlines/economy/20220324STO26154/cryptocurrency-dangers-and-the-benefits-of-eu-legislation> (last accessed 15.08.2022)

intervene (a). On the other hand, there is currently no legal disposition to prevent the financing of illicit activities through cryptocurrencies, facilitated by the anonymous nature of their transactions. On this point, the EU is aiming at obtaining more transparency in the exchange of crypto-assets (b).

a) A different apprehension of cryptocurrencies on the part of the Member states, leading to financial instability

The legal void concerning cryptocurrencies at an EU scale logically leads to a lack of harmonization in the respective legal orders of the Member states, even though some of which have begun to regulate these crypto-assets.²¹ Therefore, someone trading with cryptocurrencies is not protected by EU consumer protection rules (i), and gains from the sale of a cryptocurrency will be treated differently depending on which tax regime the taxpayer behind the gain is subject to (ii).

i. Lack of EU consumer protection rules for transactions of cryptocurrencies

One of the EU's lack of regulation concerning crypto-assets is that, in the current state of affairs, when someone is a party to a transaction involving cryptocurrencies, they are not protected by the EU consumer protection rules. The last proposal of MiCA²² intends to establish a similar system to what has already been implemented in some Member states. For example, in France, the *Loi PACTE* of May 22, 2019²³ introduced the status of Digital Asset Service Providers (DASPs), which are intermediaries that help obtain and store crypto-assets. Their registration is mandatory with the *Autorité des marchés financiers* (AMF), which may decide to issue them a license if the structure has sufficient guarantees of financial stability and transparency.²⁴ However, the European Commission plans to create a harmonized approval system for DASPs (as in France) in the twenty-seven

²¹ “Cryptocurrency regulations by country”, *Cryptos Report Compendium*, Thomson Reuters, 2022, 37 pages, available here: <https://www.thomsonreuters.com/en-us/posts/wp-content/uploads/sites/20/2022/04/Cryptos-Report-Compendium-2022.pdf>

²² MiCA DRAFT Final COMPROMISES ON BEHALF OF MEP BERGER, Version of 9 March 2022 for the vote on 14 March 2022

²³ LOI n° 2019-486 du 22 mai 2019 relative à la croissance et la transformation des entreprises (1)

²⁴ PALLUET Adrien, “Economie : face aux risques de dérives, comment l’Union européenne tente-t-elle de réguler les cryptomonnaies?” [online] , 08.07.2022, available in *touteurope.eu* website: <https://www.touteurope.eu/economie-et-social/economie-face-aux-risques-de-derives-comment-l-union-europeenne-tente-t-elle-de-reguler-les-cryptomonnaies/> (last accessed 20.08.2022)

Member states, with higher requirements than in the French regulation, which would work to guarantee consumer protection.²⁵ As the last proposal of MiCa states,

no legal or natural person should therefore be allowed to provide crypto-asset services to Union citizens on a non-occasional basis without having a legal representative or activities in the Union and without being authorized under this Regulation, even if such services are provided solely at the own initiative of Union clients.²⁶

In addition to the current lack of harmonization in consumer protection rules within the EU, Member states approach the taxation of gains from cryptocurrencies in different ways, which can lead to risks of tax evasion.

ii. Divergence of taxation regime for cryptocurrencies

Although the power of taxation falls within the competence of the Member states, the prevention of tax evasion is one of its objectives.²⁷ Through direct tax harmonization standards, the European institutions can therefore work to ensure that a taxpayer residing in one Member State is not treated differently than a taxpayer residing in another one when obtaining a capital gain from the occasional sale of cryptocurrency. This would restore the current situation where the tax regimes applying to cryptocurrencies diverge between Member states. For example, Portugal is particularly "crypto-friendly" and attracts a good number of crypto traders since it does not impose any taxation on the gains obtained from the sale of crypto-currencies. In the case of Germany, tax rules exist but are less severe than in the case of other Member states. Indeed, for individuals, gains below 600 euros from cryptocurrencies held for less than a year are considered tax-free, and when held for more than a year, they are tax-exempt. Finally, France is actually the country which taxes cryptocurrencies the most in Europe.²⁸

Another important part of EU emerging regulations concerning cryptocurrencies aims at facilitating the traceability of transfers of crypto-assets, as the anonymity of their transaction leads to fraudulent activities such as money laundering and financing terrorism.

²⁵ Ibid.

²⁶ Paragraph 51 of MiCA DRAFT Final, Op. cit., 13

²⁷ JOST Angerer, "Fiscalité directe: l'imposition des personnes et des sociétés", [online] 06/2022, available at the EU Parliament website: <https://www.europarl.europa.eu/factsheets/fr/sheet/80/fiscalite-directe-l-imposition-des-personnes-et-des-societes> (last accessed 18/08/2022)

²⁸ Cryptos Report Compendium, op.cit., 14

b) Anonymity of transactions leading to market manipulation and financial crime

Due to the fact that transactions are anonymous (more accurately, pseudonymous), cryptocurrencies are, on many occasions, subject to fraudulent activities. On March 31, 2022, MEPs in the parliamentary committee voted in favor of a revision of the European Fund Transfer Regulation²⁹ (FTR), proposed by the European Commission in July 2021, which is part of the anti-money laundering package. The aim is to add cryptocurrencies to the targets of the fight against money laundering and terrorist financing.

There are many legal issues arising from the decentralized and transparent ledger that is blockchain, and it is necessary to integrate that Bitcoin (and cryptocurrencies in general) are not the only digital assets to be based on the blockchain in order to understand the scope of those challenges.

2.2. Blockchain technology beyond cryptocurrencies as a payment method and legal issues at stake

As previously mentioned, blockchain has more implications than cryptocurrencies. The functions of its underlying technologies are not limited to the means of payment, enabled by cryptocurrencies. Thus, there are many aspects to be taken into account in its regulation process (A), with a particular interest that has been given to its implementation through decentralized finance in the last years (B). Finally, blockchain technology can be used for ethical purposes (C).

A. Difficulties about blockchain regulation

The difficulties in regulating blockchain lie in the fact that it does not admit of a unanimous definition (a), and that its characteristics and impacts can be in conflict with the provisions of the current European normative framework (b).

²⁹ Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on information accompanying transfers of funds and certain crypto-assets (recast), COM(2021) 422 final, 20.7.2021

a) Lack of a unanimous definition

The adage "it's all a matter of definition" finds no more relevant application than in blockchain, a technology distinguished by its obscure terminology: smart contract, fork, token, proof of work, consensus algorithm, etc.³⁰ However, there is actually a lack of consensus about blockchain definition. We can, however, try to explain what blockchain is through its characteristics. To set the basis, the blockchain has been developed since 2008, being primarily a technology for storing and transmitting information. This technology offers high standards of transparency and security because it operates without a central control body. Thus, the blockchain allows its users —connected in a network— to share data without intermediaries.

The European Parliament, through a resolution on virtual currencies adopted on May 26, 2016, defined blockchain as “a set of blocks integrated into a system sharing a common database”.³¹

In fact, in order to have an idea of what a blockchain concretely is, picturing a chain of several blocks —as its name recalls— that is, a growing list of records, might help. As Dr. Amoussou explained during its conference —which seems to me as an appropriate way to explain blockchain to outsiders of information technology (IT)— that each block is composed of transaction data which contain information about the previous block. What makes blockchain a tamper-proof ledger is its composition of many blocks; the more blocks there are, the more it reinforces the information, there is no possibility of breaking the chain with an intrusion because n (the reference block) is indissociable from $n-1$ (the previous block) and $n+1$ (the next block), it takes back the information of $n-1$ and it will be taken back for the block $n+1$.³²

Also, when saying blockchain is a distributed ledger³³ we're referring to a governance system managed by a peer to peer (P2P) network, which means it is

³⁰ O'RORKE William, “L'émergence d'un droit de la blockchain” Dalloz IP/IT 2019. 422

³¹ European Parliament resolution of 26 May 2016 on virtual currencies (2016/2007(INI), (2018/C 076/13), 28.2.2018

³² AMOUSSOU R., “De l'explosion des cryptomonnaies à l'émergence des NFTs: les promesses et les risques” June 8 2022, Hotel Pullman G, Bangkok City, Conference

³³ World Bank Document FinTech Note | No. 1, “Distributed Ledger Technology (DLT) and Blockchain”, 01/12/2017, 42 pages, defines a DLT as “a novel and fast-evolving approach to recording and sharing data across multiple data stores (or ledgers). This technology allows for transactions and data to be recorded, shared, and synchronized across a distributed network of different network participants” available at: <https://documents1.worldbank.org/curated/en/177911513714062215/pdf/122140-WP-PUBLIC-Distributed-Ledger-Technology-and-Blockchain-Fintech-Notes.pdf> (last accessed 05.06.2022)

synchronized and accessible across different sites and geographies by multiple participants, in contrast with a centralized ledger.

Furthermore, three main functions of blockchain can be summarized as (1) storing information, (2) tracking the exchange of value, and (3) digitizing and automating rules through smart contracts³⁴ (this notion will be dealt with later).

Under French law, blockchain is defined, without further clarification, as an "electronic shared recording device" by the "blockchain" ordinance.³⁵ Its implementing decree³⁶ specifies that this device is “designed and implemented in such a way as to guarantee the recording and integrity of registrations and to make it possible, directly or indirectly, to identify the owners of the securities, the nature and the number of securities held”.

The workings of blockchain described are in conflict with some existing provisions of European law, which adds an additional difficulty to its regulation.

b) Conflict of regulation with existing EU laws

The main conflict of regulation with the EU existing laws happens with the personal data protection (i) and with the EU environmental law (ii).

i. The “inevitable regulation clash”³⁷ between blockchain and personal data protection

Although there seem to be some contradictions between blockchain decentralized technology and personal data protection, there is an attempt of reconciliation of the latter through the legislative work of the European Union.

³⁴ TRIVUNOVIC M., JOHNSON J., MATHISEN H, “Developing an NGO corruption risk management system: Considerations for donors, U4 Issue” (2011)

³⁵ Ordinance No. 2017-1674 of December 8, 2017 on unlisted financial securities

³⁶ Decree No. 2018-1226 of December 24, 2018

³⁷ AMOUSSOU Roland, “Personal Data Protection vs. Crypto: The Inevitable Regulation Clash! [online] October 12, 2021, available on LinkedIn website: <https://www.linkedin.com/pulse/personal-data-protection-vs-crypto-inevitable-clash-roland-amoussou/> (last accessed 03.05.2022)

Immutability vs. data update, minimization, and destruction

It seems that there is a main contradiction between personal data protection and blockchain technology when the regulation of personal data protection (now ensured in Europe by the General Data Protection Regulation of 2018,³⁸ GDPR³⁹) was drafted with the assumption that data collection processing and use are centralized whereas data governance regarding cryptocurrencies is decentralized. Also, records on blockchain registered among nodes are “immutable” which means that they cannot be modified or changed. That goes against GDPR principles such as data update, minimization, and destruction.⁴⁰ According to the doctrine, “If the law of personal data was thought for centralized data processing, blockchain technology is based on a distributed network. This makes it difficult to identify data controllers and data processors as points of accountability for personal data law”. Moreover, “Rights that involve modification or deletion of data are difficult to reconcile with data are difficult to reconcile with blockchain technology because of the intangible nature of the registry, as records can no longer be changed.”⁴¹

Attempt of reconciliation between the GDPR and blockchain regulation

However, there is a process of reconciliation between this development of blockchain and the GDPR. In fact, depending on the protocol used by blockchains, which can be public or private, the nature of the data collected and processed will vary, as these blockchains may or may not contain personal data. A private blockchain is a private network where a manager chooses its participants, controls, and modifies the approval process. On the contrary, in the public blockchain, access is possible by all participants, without the ability to restrict them, and the verification and validation of transactions is possible by all.

The question of whether the data processed on a blockchain is personal, pseudonymous or, conversely, completely anonymous is an essential prerequisite, since it determines whether or not the GDPR applies (GDPR, art. 4 and recital 26).

³⁸ REGULATION (EU) 2016/679 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC, OJ L 119/1, 4.5.2016, p. 1-88

³⁹ CHAFIOL Florence, BARBET-MASSIN Alice, “La *blockchain* à l’heure de l’entrée en application du règlement général sur la protection des données” *D. IP/IT* 2017. 637

⁴⁰ AMOUSSOU Roland, *op. cit.*

⁴¹ DOUVILLE Thibault, “Blockchain et protection des données à caractère personnel”, *AJ contrat*, (2019), Dalloz p. 315

A conflict also arises between blockchain and a major concern of the EU that has also become societal: the preservation of the environment.

ii. Blockchain energy intensive and complying with the Green Deal

The last proposal of MiCA,⁴² after submission to the vote of the Economic and Monetary Affairs Committee of the European Parliament (ECON), on 14 March ,2022, has been the result of a provisional agreement for the first time between the Council and the European Parliament. In this new version of the proposal, some revisions were made, especially concerning the banning of proof of work (PoW) mining,⁴³ which contrary to what had been discussed in the EU Parliament so far, won't be —for now— directly prohibited. PoW describes one of the many existing consensus mechanisms based on a distributed ledger.⁴⁴ According to the distributed nature of blockchain, the participants of the network (represented by nodes) “to reach a consensus regarding the validity of the new data entries by following a set of rules”.⁴⁵ In a PoW system, network participants have to solve so-called “cryptographic puzzles” to be allowed to add new “blocks” to the blockchain, which means these cryptographic puzzles are made up out of all information previously recorded on the blockchain and a new set of transactions to be added to the next “block”.⁴⁶ However, in the proof of stake (PoS) —which is also a consensus mechanism—, the participant must prove ownership of a certain asset (a certain amount of coins in the case of cryptocurrencies) in order to participate in the validation of transactions.⁴⁷

Using PoW as a consensus mechanism creates a large electricity footprint (because vast amounts of computing processing power are used up for “mining”).⁴⁸ This poses an environmental issue that the EU is concerned about. To give us a concrete idea, the production of Bitcoin requires the consumption of 105.2 terawatt-hours per year, according to the University of Cambridge, which is equivalent to the electricity

⁴² MiCA DRAFT Final COMPROMISES ON BEHALF OF MEP BERGER, Version of 9 March 2022 for the vote on 14 March 2022

⁴³ The process of generating proof of work is called “mining”

⁴⁴ STUDY Requested by the TAX3 committee, “Cryptocurrencies and Blockchain; Legal context and implications for financial crime, money laundering and tax evasion”, PE 619.024, July 2018, 103 pages

⁴⁵ World Bank Document, op. cit., 6

⁴⁶ STUDY requested by the TAX3 committee, op.cit. 18

⁴⁷ Ibid.

⁴⁸ Ibid.

consumption of the Netherlands.⁴⁹ And that's without mentioning the waste of hardware resources used to mine cryptocurrencies.

Ensuring that the technology employed was environmentally friendly and in line with the objectives of the EU Green deal is actually one of the objectives set by the last proposition of MiCA. This compromise submitted to the Parliament intended to strongly limit the use of the PoW mining method as a consensus mechanism to validate transactions on the blockchain, because of its high environmental impact. The text States that:

proof-of-work is often associated with high energy consumption, a material carbon footprint and significant generation of electronic waste. Those characteristics may undermine Union and global efforts to achieve climate and sustainability goals, until other more climate friendly and not energy intensive solutions emerge [...].⁵⁰

This new proposal was adopted very soon after the Executive Order on Ensuring Responsible Development of Digital Assets, 9 March 2022⁵¹ of President Biden, although it is actually less ambitious than the EU proposal, as shown by the shorter length of this text. In all cases, it shows a growing interest from States and international organizations about blockchain technology.

There are other areas regulated by European law that can potentially be affected by blockchain, especially in the private law sector. We will discuss them in chapters 2 and 3 of this work.

With the development of DeFi, we have an example of the potential use of blockchain technology in a sector that is originally centralized: finance.

B. Emerging regulation of Decentralized Finance (DeFi) in the EU and challenges to traditional financial sector

Also, part of the Digital finance package mentioned previously, there is an increasing interest around DeFi, which refers to “an ecosystem that allows for the utilization of financial services such as borrowing, lending, trading, getting access to insurance, and more without the need to rely on a centralized entity”.⁵² This interest is reflected in the

⁴⁹ PALLUET Adrien, op. cit.

⁵⁰ MiCA draft regulation, op. cit., recital 5a

⁵¹ United-States Executive Order on Ensuring Responsible Development of Digital Assets, MARCH 09, 2022, Presidential actions

⁵² HOR Benjamin, WIN WIN Khor, LEE Shaun Paul, YAP Dillon, HONG Chin Yi “How to NFT”, 1st

implementation of DLT in the EU's financial structures (a) which will require adapting the EU financial services regulatory framework to a decentralized environment. As an example of this, regulating fintech companies presents a legal challenge as they obey a centralized model in contrast with DeFi (b).

a) Utilization of the distributed ledger technology (DLT) in the EU financial sector

An EU regulation on DLT⁵³ was published in the Official Journal of the EU on June 2, 2022, for an entry into force on March 23, 2023.⁵⁴ It aims at creating a pilot regime for crypto-asset markets, experimenting with the use of blockchain in financial structures in the EU, as a decentralized digital storage mode without an intermediary or control body. This regulation was adopted by the Council in December 2021 and the Parliament on March 24, 2022.

Also, the third chapter of the European Financial Stability and integration review (EFSIR) from 2022⁵⁵ published by the European Commission is dedicated to DeFi and its challenges. According to it, DeFi is a

newly emerging form of autonomous financial intermediation in a decentralized digital environment powered by software – ‘smart contracts’ on public blockchains. It involves uncontrolled access to financial services on a quasi-anonymous basis using crypto-asset wallets. The DeFi approach puts smart contracts at the core of financial services and, in its purest form, executes all transactions on a public blockchain, ensuring full transparency of the associated data.⁵⁶

With the increasing development of fintech companies, another question arises as to how they should be regulated. Although they obey a centralization model, they could be threatened, in the near future, by the development of DeFi.

Edition, January 2022, Coin Gecko, 220 pages

⁵³ REGULATION (EU) 2022/858 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 30 May 2022 on a pilot regime for market infrastructures based on distributed ledger technology, and amending Regulations (EU) No 600/2014 and (EU) No 909/2014 and Directive 2014/65/EU, OJ L 151/1, p. 1-33

⁵⁴ Ibid., recital 19

⁵⁵ EUROPEAN FINANCIAL REVIEW 2022, COMMISSION STAFF WORKING DOCUMENT, SWD(2022) 93 final/2, Brussels, 07.04.2022

⁵⁶ Ibid.

the main benefit of DeFi is known to be the reduction of the risk of fraudulent activity through blockchain technology.⁶¹

Tokenization is another key issue concerning the regulation of crypto-assets as many possibilities are emerging of the items that could be tokenized. This opens the door to an infinite number of forms of possession, including in the world of the metaverse, that can be defined as a “virtual reality environment where users can interact with one another”.⁶²

C. The emergence of a more ethical blockchain through tokenization

Tokenization is the act of using a smart contract (i.e., a computer program) to create a token that is then anchored in a blockchain. This means that a computer program is used to create a digital asset that can be transferred from one person to another. The process of creating a digital asset with a smart contract is called "minting". The smart contract allows to represent any intellectual property right (IP), e.g., trademarks, designs, patents, or copyrights, with a token.⁶³

I had the opportunity to integrate the ethical dimension of blockchain during my internship, through a project on which the lawyer who supervised me was working. Dr. Amoussou is the president and co-founder of the ASIAFRICA Foundation (ASAFO),⁶⁴ registered in Thailand, whose goal is to bridge development and cooperation between Asia & Africa. He was working on the *AsiaFrica coin*, which had already been minted by his team on Cardano Blockchain, and whose white paper was still to be written. The *AsiaFrica coin* is part of what is called a "goodness token". The lawyer defines the latter as “a data unit representing the contribution to social value as currency, token, or store of value that grows with projects, collectibles, and intangibles of the ecosystem”.⁶⁵ Therefore, by subscribing to a portion of the *AsiaFrica coin*, one becomes in some ways a beneficiary of the project, while participating in the fundraising, since in exchange for selling the

⁶¹ ADJINACOU, Luc Jose “La DeFi marquera-t-elle vraiment la fin de la FinTech ?” [online] Feb 22 2022, available in cointribune website: <https://www.cointribune.com/blockchain/ecosysteme/la-defi-marquera-t-elle-vraiment-la-fin-de-la-fintech/> (last accessed 15.07.2022)

⁶² HOR Benjamin, WIN WIN Khor, LEE Shaun Paul, YAP Dillon, HONG Chin Yi, op.cit. 206

⁶³ WILKOV Neil, “Tokenization of intellectual property for IP rights management” [online] January 12, 2022, available in <https://ipkitten.blogspot.com/2022/01/tokenization-of-intellectual-property.html> (last accessed 04.04.2022)

⁶⁴ Official website of the Foundation available here: <https://www.asiafricafoundation.org/>

⁶⁵ Available in a publication of the Facebook group “ASIAFRICA - AsiAfrica Foundation Group”: <https://www.facebook.com/photo/?fbid=10159650586683405&set=a.392060443404>

tokens they had created, the creators of the *AsiaFrica coin* received streams of money. Basically, his idea is making donation possible through tokenization.⁶⁶ When I asked him about the advantages of going through tokenization rather than creating a classical fundraising, he told me that the main benefit is that the fundraisers may get some amount of money in return, depending on the fluctuations of the token created, which doesn't occur in a regular fundraising. This aspect, in my opinion, even if it diminishes the inherent aspect of the donation, which is that it is made in a disinterested and unilateral manner, could encourage more people in the future to participate in funding of this nature. Moreover, thanks to tokenization, all transactions are visible through the blockchain in which the token has been created, which allows donors to track the use of their donations by their beneficiaries in a way that respects personal data.

The legal consequences tokenization might have in the future is that basically, any product or service that is or relies on an intermediary could be tokenized. This is what brings us to NFTs. "NFTing" important documents like legal contracts, house deeds, insurance, and licenses, could be the future. They might therefore cause disruptions in contractual law and the respective roles of lawyers and judges. Elsewhere, they will arguably help the digital economy to grow. In terms of current events, tokenization and minting are key elements in order to create digital arts such as NFT that will be addressed in this second chapter of this report.

3. NFTS, AS EXTENSION OF CRYPTOCURRENCIES AND PART OF THE BLOCKCHAIN TECHNOLOGICAL REVOLUTION

Currently, NFTs are being popularized with art. The crypto-art market was recently valued at \$41 billion by the *Financial Times*, a figure that approaches the traditional art market (\$50 billion).⁶⁷ As an example of this craze, we can quote the crypto artist Beeple, who sold in March 2021, the cryptoart work "Everydays: the first 5000 days" in NFT for \$69 million at Christies, a major auction house. This enthusiasm for NFTs can be explained

⁶⁶ AMOUSSOU R., Naga J., PARBHU, R., SHAH F., Webinar hosted by Connect Africa, established in Singapore, about the true potential of Crypto, Blockchain, NFTs and the Metaverse to transform African markets, 04 April 2022, recap available here: https://connectafrica.com.sg/pdf/Connect_Africa_webinar-Crypto,blockchain,NFTs_and_Metaverse_in_African_markets_post%20event%20coverage.pdf

⁶⁷ MURPHY, Hannah, OLIVER, Joshua "How NFTs became a \$40bn market in 2021" [online] December 31, 2021, available in Financial Times website: <https://www.ft.com/content/e95f5ac2-0476-41f4-abd4-8a99faa7737d> (last accessed 26.08.2021)

by the acceleration of hyper-digitization with the COVID 19, and by the rise of the cryptocurrencies in 2021, which provoked the investment in digital works, since the crypto community had more liquidity.⁶⁸ Since 2018, many projects using NFTs have developed on Ethereum, in various domains, from video games to art, through virtual worlds. Ethereum is a “technology that's home to digital money, global payments, and applications”.⁶⁹ The Ethereum community “has built a booming digital economy, bold new ways for creators to earn online (...) It's open to everyone”, with an access to internet as the only prerequisite.⁷⁰ Through OpenSea marketplace⁷¹ anyone can list their NFTs and buy them.

For some, the NFT trend raises the question of what can be considered art. They fear that this new system will be used only to make money, stifling the artistic dimension. This chapter will address the underbelly of these digital assets that are often discredited by many “childish” and dishonest uses. Indeed, NFTs can be the ground for many counterfeits.

According to Dr. Amoussou, everything that touches our possessions will be framed by NFTs. From smart contracts, came property rights, tokens, and the natural evolution of this dynamic led us to NFTs. It is an evolution of traditional cryptocurrencies, as crypto-assets based on the blockchain.

Actually, the problem surrounding them is common to cryptocurrencies; there is a lack of regulation of those crypto-assets. In the case of NFTs, they are not even covered by the proposed MiCA regulation mentioned previously.⁷² Indeed, there's a lack of upstream regulation to prevent copyright infringement, allowing any creator to upload on NFTs platforms a copy of preexisting artworks whose associated rights don't belong to them.

⁶⁸ MARTIN Nicolas, BALVA Claire and POUARD Nicolas “NFT, le crypto art”, “La méthode scientifique” [online] France Culture, April 7, 2021 58 min., available at: <https://www.radiofrance.fr/franceculture/podcasts/la-methode-scientifique/nft-le-crypto-art-8533686> (last accessed 29.04.2022)

⁶⁹ Ethereum website [online] available in: <https://ethereum.org/en/> (last accessed 30.07.2022)

⁷⁰ Ibid.

⁷¹ Online NFT marketplace founded in December 2017, nowadays the first of its kind and the industry leader

⁷² Proposal of MiCA, op. cit., recital 8(a) “*Crypto-assets that are unique and not fungible with other crypto-assets, which are not fractionable and are accepted only by the issuer, including merchant's loyalty schemes, represent IP rights, guarantees, certificate authenticity of a unique physical asset, or any other right not linked to the ones that financial instruments bear, and are not accepted to trading at a crypto-asset exchange, should be excluded from the scope of this Regulation.*”

However, law rules are composed to adapt to technological developments. It has always been able to accommodate technical subsequent innovations to its development: an example is the technological revolution of the 1990s, during which pre-existing law rules managed to find their application to the Internet. Copyright is a good example of this, as the legal texts of some Member states that aimed at protecting seem general enough to extend to NFTs.⁷³ This is made possible thanks to this "flexible" aspect of the law, to apply the already existing laws.

The first part of this second chapter will be dedicated to the presentation of NFTs through the field that popularized it, that is, cryptoart (1), before considering through which spectrum they could be regulated by the European legislator and the applications and implications that they are beginning to have and may have in the future (2).

3.1. A new expression of Blockchain in the field of art through non-fungibility

In order to define NFT, its non-fungible characteristic is essential to grasp. It is in fact, because of its non-fungibility that it can be considered as the cornerstone of cryptoart (A). On the other hand, the advantages brought by NFTs within the art market also stem from this non-fungible nature (B).

A. Definition and chronology of NFTs, cornerstone of cryptoart

First and foremost, we have to understand that crypto art is a digital art form. It is treated like physical artwork collections, and owners may have verified ownership of a piece of cryptoart. The art world has long had established systems for collection paintings or sculptures and this is also the case for cryptoart. Cryptoart can take many forms, from digital graphics to music, virtual reality (VR) dreamscapes, or programmable art. These digital assets can have a collector's value and can represent items, including still graphic images, photography, GIFs, videos, music... Although cryptoart is usually digital artwork, it can also be physical art tracked in a blockchain or "crypto" system. Many of the works available in the cryptoart niche are crypto-themed artworks, with subject matters that are focusing on digital culture and technology.

⁷³ As an example, Article L. 122-4 of the Intellectual Property Code of France does not distinguish between physical and virtual art; it applies equally to both

The cryptoart concept is related to the idea of digital scarcity. In fact, when digital art has been in existence for some time, what cryptoart enables is the digital scarcity that is made possible via non-fungible tokens, abbreviated “NFTs”, anchored in a blockchain. Like traditional art, cryptoart exists in limited quantities, and in some cases, buyers can purchase the rights to partial royalties and reproduction of the artwork. With this mindset, cryptoart can be treated, sold, traded, and collected. Although cryptoart is usually digital artwork, it can also be physical art tracked in a blockchain or “crypto” system. Many of the works available in the cryptoart niche are crypto-themed artworks, with subject matters that are focusing on digital culture and technology. Concretely, a NFT is a receipt showing that someone purchased a digital asset, like a JPEG. Because each token is uniquely identifiable, NFTs differ from Blockchain cryptocurrencies, such as Bitcoin⁷⁴ in its nature, and consequently in its function.

The fact NFTs are uniquely identifiable is what their non-fungibility means. We are surrounded by non-fungible objects. Our phone, glasses, etc. They have their own identity, history. They are identifiable. However, the "fungible" good will always have the same value, and it can be divided: the ultimate example of a fungible good is money. The lawyer explained this notion during his conference with an example: when someone lends a sum of money in cash, he does not expect the restitution of the same banknotes, just to receive the same total amount he lent to his creditor. As to its legal definition, fungibility is:

the quality applied to goods or materials which, not being individualized, are designated in a contract only by their kind (one ton of coal, ten quintals of wheat) and their quantity. The consequence of this specificity is that a person who holds a fungible thing on behalf of a third party, for example a depositary or a borrower, is only obliged to return the same quantity of the same kind, without any complaint being made against him for not offering to return the same thing that was given to him.⁷⁵

To be able to access non-fungible objects, one uses fungible goods (money). Fungible is the creation of a homogeneous medium to exchange value. One Bitcoin will be worth one Bitcoin while one NFT is worth no other NFT. I believe that the table of

⁷⁴ SCHROEDER, Stan, « Crypto trading card game 'Gods Unchained' looks pretty sweet in first gameplay trailer » [online] Mashable, November 16, 2018, available at:

<https://mashable.com/article/gods-unchained-trailer> (last accessed 29.04.2022)

⁷⁵ BRAUDO Serge, Dictionnaire du droit privé, un dictionnaire juridique de Serge Braudo [online] Définition de Fongible, available at:

<https://www.dictionnaire-juridique.com/definition/fongible.php> (last accessed 04.04.2022)

examples I made in one of the slides of the presentation shown during the conference might help to understand better what fungibility is (*Annex II*).

The other distinction that can be made with cryptocurrencies is that Bitcoin, for example, has its own blockchain. Behind Bitcoin is the Bitcoin blockchain, which lists all the transactions made in Bitcoin since its creation. NFTs, for their part, work ON TOP of an existing Blockchain, the Ethereum Blockchain, which works with the cryptocurrency called Ether. NFTs work with programs that are inserted into this blockchain to create new tokens without necessarily recreating a blockchain each time.⁷⁶ The reason is a question of established standards, and the number of people in the community. NFTs could work with Bitcoin blockchain, but there's a larger community on Ethereum to handle NFTs.

Actually, Dr. Amoussou, made a legal experiment. It consisted into "NFTying" through the Ethereum Blockchain the definition of NFTs and making it available in OpenSea platform, with a JPEG attached to it (*see Annex III*). According to that definition, NFT's are "data units that authenticate ownership, rights, obligations, enforcement of agreements, awards, or decisions on the blockchain".⁷⁷ He has supposedly been the first one to realize this experiment. The definition can be found by typing "NFTed legal definition" in the search bar of OpenSea platform.

To understand the interest of NFTs, we need to go back to the characteristics of the technology on which they are based, the blockchain.

B. The interest behind NFTs: advantages of blockchain system in the art market

At this stage of the work, we understand that a NFT guarantees authenticity thanks to a digital certificate anchored through a line of codes in a blockchain.⁷⁸ In one of the presentation slides, I gave the example of purchasing a poster of *Mona Lisa* printed on glossy paper on the Internet. The price paid to obtain this poster is far from that of the original work, exhibited in the Louvre, estimated to be worth between 1 and 2 billion euros. We can then draw a parallel with the NFTs: the price paid by the buyer of the digital

⁷⁶ MARTIN Nicolas, BALVA Claire, POUARD Nicolas, op. cit.

⁷⁷ AMOUSSOU Roland, "NFTed Legal Definition (1)" [online] available at: <https://opensea.io/assets/0x495f947276749ce646f68ac8c248420045cb7b5e/103147186135273595905823907744542391433622816956958964399362582065830070059009> (last accessed 06.07.2022)

⁷⁸ MARTIN Nicolas, BALVA Claire, POUARD Nicolas, op. cit.

work of Beeple *Everydays: the First 5000 days* (69.7 billion euros) is in fact the price paid to obtain the original certificate of authenticity of the JPEG representing this work. Although a simple search on Google image with the name of the work can allow you to download the image in a totally free way, it will be a copy whose value is zero, because it won't enable the access to such certificate. (*Annex IV*)

The value of NFTs is based on the agreement between the creator and the buyer regarding their authenticity. The fact of buying NFTs, can allow to ensure the control of the copyrights, and in particular the right of resale, as well as the traceability of future transactions. Anyone can create experiences, access based on these tokens. For example, if one has a property certificate, in some cases, his property right allows him to meet an artist. This is what we call “interoperability”.⁷⁹

Besides, the role of blockchain in the art market through NFTs is to differentiate between artwork and counterfeit and to verify the ownership of an artwork. As we have already mentioned, Blockchain technology has the advantage of transparency, trust for users and greater security. Of course, these advantages are in line with the concerns of the art market players who aspire to secure transactions and be more transparent with prices.

The main advantage of NFTs is that they allow artists who produce digital works to better sell their creations. Thanks to this system, many artists have been able to bypass the rules of the art market that disadvantage them. For example, these NFTs can allow artists to sell their works rather than going through heavy processes with centralizing intermediaries (e.g., agents) who take quite large commissions. This shows that these technologies are of real interest to constituents, especially artists who can then use NFT technology to disseminate their art on a larger scale.

According to the doctrine,⁸⁰ in the context of the art market, there are two concerns which are the certification of works and the transactions of these same works. In the first case, the blockchain appears essentially as a decentralized registry which allows the certification of art works (a); in the second case, it is used as an instrument of efficiency of transactions (b).

⁷⁹ Ibid.

⁸⁰ GOFFAUX CALLEBAUTE Géraldine “*Blockchain et marché de l'art*”, AJ contrat 2019. 324, website of the legal review Dalloz

a) The certification of the artwork

Blockchain can offer many benefits for the art market through NFTs. As a decentralized registry, the blockchain can *a priori* be a useful tool to determine the authenticity and origin of artworks and collectibles.

In fact, blockchain could include all this information, whose characteristics would also enable it to fight against the illicit traffic of cultural goods. Beyond that, it could be the instrument of constitution of a global register of art objects, which would be a register of property titles. The blockchain would then replace the catalog that describes and lists all the works of an artist. Some authors imagine that all the information about a work or an artist would be included in an open blockchain, "accessible" to anyone interested in acquiring a work, in order to respond the criticisms relating to the opacity of prices in the art market.⁸¹ This type of use is already offered to authors who want to protect their intellectual property rights, but it is mainly graphic authors or photographers who can thus time-stamp and store the footprint of digital and digitized works. One could then envisage that artists whose works have a digital support to integrate their own works directly into the blockchain and thus facilitate the proof of the anteriority of their rights and the attribution of works.

Also, via NFTs, transactions become easier than what it used to be in the traditional art market.

b) Transaction efficiency

The use of blockchain could also promote transaction efficiency. The efficiency of transactions can be achieved through smart contracts, allowing autonomy and therefore more efficient execution of commitments. From then on, different uses of these smart contracts can be envisaged in the context of the art market.

Despite these advantages NFTs have in the field of cryptoart, one should not neglect the legal issues that these NFTs entail.

⁸¹ Ibid.

3.2. Issues raised by the lack of regulation of NFTs

The traditional art market is framed by numerous laws aiming at protecting the rights of artists, collectors, and intermediaries. As a new form of art, cryptoart, and more particularly the NFTs, must also be regulated. Although there are no laws specifically dedicated to them, we can already imagine the application of existing laws in EU law (A). However, this lack of regulation may become problematic in the future for the numerous applications NFT might have beyond cryptoart (B).

A. Questioning the applicable existing law

Among EU existing laws, we can imagine the application of some of them to NFTs, through the spectrum of copyright (a) as well as through the spectrum of trademark law (b), and finally, in some cases, through the spectrum of general data protection (c).

a) The application of copyright law and its challenges

Concerning the link between these NFTs in the art world and the regulation of copyrights, there are two sides of the coin about copyright protection with NFTs. On the one hand, as we've stated previously, cryptoart is a digital art form, which is easily replicable. Consequently, there have been several case laws concerning counterfeits in cryptoart world. This is because in practice, NFT platforms rarely check whether the issuers of tokens linking to an underlying work own the intellectual property, as authors or licensees.⁸² As an example, the copyright of the painter Picasso is related to his heirs, as the term since the year of his death (1973) hasn't passed for it to be considered to the public domain, which will be the case in 2043,⁸³ in virtue of an EU directive 93/98/EEC of 29 October 1993.⁸⁴ Yet, there have been counterfeits of one of his works "Le Taureau" that were listed on the main NFT market platform, OpenSea. Those counterfeits consisted of moving images of the original work. Picasso Administration, that manages the rights

⁸² "Arnaque NFT : les droits d'auteur pillés", Ziegler & Associates law firm website [online] Avril 11, 2022 available at: <https://www.ziegler-associes.com/publications/articles/arnaque-nft-les-droits-d-auteur-pilles> (last accessed 25.06.2022)

⁸³ BAVELIER Ariane, "Picasso contre Picasso", May 2014, website of the newspaper Figaro available in <https://www.lefigaro.fr/arts-expositions/2014/05/23/03015-20140523ARTFIG00365-picasso-contre-picasso.php> (last accessed 03.06.2022)

⁸⁴ COUNCIL DIRECTIVE 93/98/EEC of 29 October 1993 harmonizing the term of protection of copyright and certain related rights, OJ L 290/9, 24/11/1993, p. 1-5

to the artist, sued the artist Trevor Johns, whose NFT was removed from an auction at Christie's.⁸⁵

On the other hand, blockchain technology may help to improve licensing the rights as well as tracing an infringement, thanks to the transparency of the distributed ledger that constitutes blockchain. Despite the transparency of blockchain, it is anonymous, so difficulties arise when there is such an infringement which emerging laws try to palliate.

There's actually a growing interest from states and the EU to regulate copyright infringements about NFTs. In fact, the Directive (EU) 2019/790⁸⁶ of the European Parliament and of the Council of 17 April 2019 on copyright and related rights in the Digital Single Market aims at installing, a liability regime for platforms storing and providing public access to a significant amount of copyrighted works.⁸⁷ Actually, OpenSea hosts a great number of copyrighted works that might therefore benefit from the protection granted by this directive.

Among the fields of EU copyright law, there are questions from the doctrine concerning the application of resale rights (i) and distribution rights to NFTs (ii).

i. Resale right⁸⁸

According to the article 1 of an EU directive dedicated to the resale right:⁸⁹

1. Member States shall provide, for the benefit of the author of an original work of art, a resale right, to be defined as an inalienable right, which cannot be waived, even in advance, to receive a royalty based on the sale price obtained for any resale of the work, subsequent to the first transfer of the work by the author. 2. The right referred to in paragraph 1 shall apply to all acts of resale involving as sellers, buyers or intermediaries art market professionals, such as salesrooms, art galleries and, in general, any dealers in works of art. 3. Member States may provide that the right referred to in paragraph 1 shall not apply to acts of resale where the seller has acquired the work directly from the

⁸⁵ AZIMI Roxana "La crypto contrefaçon crispe le monde de l'art" [online] January 4 2022, website of the newspaper "Le Monde" available at:

https://www.lemonde.fr/m-le-mag/article/2022/01/04/la-crypto-contrefacon-crispe-le-monde-de-l-art_6108105_4500055.html (last accessed 03/06/2022)

⁸⁶ DAMUN, op. cit.

⁸⁷ Ibid., Articles 1, 17.1 and 17.4

⁸⁸ The right, for the benefit of the author of an original work of art, to receive a percentage of the price obtained for any resale, made by professionals from the art market, of this work (auction houses, galleries or any other art market).

⁸⁹ Directive 2001/84/EC of the European Parliament and of the Council of 27 September 2001 on the resale right for the benefit of the author of an original work of art

author less than three years before that resale and where the resale price does not exceed EUR 10000.

According to this provision, the resale of a digital, graphic or plastic work associated with a NFT should therefore be subject to resale right as long as it is an "original" work within the meaning of this text. In other words, the resale right applies to works existing in a single copy or in a limited number of copies authorized by the author. The purpose of the NFT is precisely to distinguish a single copy or "numbered" copies from unlimited digital copies. The fact that the digital file is not created by the artist himself, if he has no computer skills for example, is not an obstacle, as long as the work is created "by the artist himself or under his authority".⁹⁰

However, what seems to be a problem is the application of paragraph 1 of article 2⁹¹ of the Directive. In fact, the subject of the resale right has to be "works of graphic or plastic art such as pictures, collages, paintings, drawings, engravings, prints, lithographs, sculptures, tapestries, ceramics, glassware and photographs". The artwork has therefore to exist in a physical form. It is usually not the case of NFTs, being a representation of the artwork and not the artwork itself. In addition to this, the sale of a NFT, in most cases, doesn't involve the sale of an artwork, but rather the reassignment of a dataset in the blockchain.⁹²

Another issue would be concerning the application of paragraph 3 of the article 1 that establishes an exclusion on the application of the resale right when "the sale price does not exceed 10,000 euros". The text thus refers to transactions carried out in euros. However, the transaction could be carried out *via* cryptocurrencies, such as Bitcoin, or Ether. According to part of the doctrine, this does not seem a prohibitive obstacle, as long as they can be converted into euros.⁹³

⁹⁰ Ibid., Article 2.2

⁹¹ "For the purposes of this Directive, "original work of art" means works of graphic or plastic art such as pictures, collages, paintings, drawings, engravings, prints, lithographs, sculptures, tapestries, ceramics, glassware and photographs, provided they are made by the artist himself or are copies considered to be original works of art."

⁹² PROHASKA-MARCHRIED, Martin "NFTs in the art market: Can digital artworks creators claim resale rights?" (online) January 13, 2022, available at: <https://www.taylorwessing.com/en/insights-and-events/insights/2022/01/nfts-in-the-art-market-austrian-perspective> (last accessed 28.08.2022)

⁹³ VARET Vincent, Associate Professor at the University Panthéon-Assas Paris II, and PRES Xavier, professor at the University Paris Dauphine and at CELSA, Doctors of Law, VARET PRÈS partners, "3 questions à Xavier Près et Vincent Varet sur les NTF Art", [online], available in the web site <https://blog.clubdesjuristes.com> (last accessed 07.04.2022)

However, in practice, these hesitations are often swept away when the smart contract, which generates the NFT, provides in its computer code a device equivalent to the resale right by subjecting any resale of the NFT to the attribution, for the benefit of the creator of the work, of a share of its sale price. In this sense, we must also acknowledge the politics that start to apply from NFTs platforms such as OpenSea. In fact, in this platform, the following process has been established: developers who create their own marketplace are allowed to determine the commission percentage which will then be attributed to the NFT creators.⁹⁴ As for the gray areas concerning its application, it is to be hoped that the Court of Justice (hereinafter CJEU) will pronounce itself in a future decision

Distribution rights are the other important issue regarding the application of copyright to transactions involving NFTs that occur on the blockchain.

ii. Distribution rights

The question is whether, beyond graphic and plastic works, the resale of an NFT associated with a copyrighted work is subject to the distribution right, which allows the copyright owner to authorize or prohibit the commercialization through the sale of copies of his work. This right, conceived in the material world, has the particularity of being exhausted after its first exercise by its owner. In other words, the latter alone can authorize the first sale of copies of his work; but, once they have been marketed with his authorization, they must be able to circulate freely in the European Economic Area, and thus be resold, without him being able to oppose this. This rule, called "exhaustion of the distribution right", was designed in the EU framework through InfoSoc Directive⁹⁵ to reconcile copyright and the free circulation of goods, i.e., the material supports of the works (paper books, CDs, DVDs, etc.), within the single European market. In concrete terms, it allows the purchaser of a book, a vinyl, or a DVD, made with the authorization

⁹⁴ MEZEI, Peter, QUINTAIS, João Pedro, GIANNPOULOU, Alexandra, BODÓ, Balázs "The Rise of Non-Fungible Tokens (NFTs) and the Role of Copyright Law – Part II" (online), April 04 2021, available at: <http://copyrightblog.kluweriplaw.com/2021/04/22/the-rise-of-non-fungible-tokens-nfts-and-the-role-of-copyright-law-part-ii/> (last accessed 28.08.2022)

⁹⁵ Article 4.2 of Directive 2001/29/EC of the European Parliament and of the Council of 22 May 2001 on the harmonisation of certain aspects of copyright and related rights in the information society Official Journal L 167 , 22/06/2001 P. 0010 - 0019

of the author of the work incorporated in it, to resell it freely when he no longer has any use for it.⁹⁶

The extension of this rule to the digital world has been the subject of fierce debate: in summary, the CJEU has admitted its application to dematerialized software (i.e., commercialized by way of download, the file thus obtained and the associated license key being able to be "resold" by their "purchaser" without the copyright owner being able to object);⁹⁷ but has excluded it for digital books and, *a priori*, other works, so that the "resale" of a second-hand digital book is subordinated to the authorization of the owner of the related copyright.⁹⁸ According to the CJEU, in fact, the copyright owner retains the right to authorize or prohibit each "resale" of digital files incorporating his work.

It can be accepted that the resale of an NFT, which, it should be remembered, is a title identifying its owner and guaranteeing him or her access to the associated work, can be assimilated to the sale of a physical copy of this work.⁹⁹ However, if NFTs are subject to the distribution right, it is legally possible to resell without the authorization of the copyright owner NFTs associated with the same work independently of the condition of their existence in "limited quantity". In addition, it encourages the emergence of new commercial practices in the music and audiovisual world. For example, in March 2021, the rock group *Kings of Leon* marketed its latest album in the form of NFTs, each of which gives access to the album itself, its cover and VIP concert tickets. And the French rapper *Booba* has recently marketed the video of one of his songs in the form of 25,000 NFT. If, as we believe, the commercialization of these NFTs falls within the scope of the distribution right, their first purchasers will be able to resell them freely, without the authorization of the creators in question.

As mentioned before, applying trademark law to NFTs seems to be possible but is complementary to the application of copyright law in any case.

⁹⁶ VARET Vincent, Xavier PRES, op.cit.

⁹⁷ CJEU July 3, 2012, "Usedsoft", C-128/11

⁹⁸ CJEU, December 19, 2019, "Tom Kabinet", C-263/18

⁹⁹ VARET Vincent, Xavier PRES, op.cit.

b) The application of trademark law

First of all, can NFTs be considered as trademarks? There is a communication¹⁰⁰ on EUIPO website, under the section news, that gives guidelines about how NFTs should be classified according to Nice Classification.¹⁰¹ This approach is set out in the 2023 draft Guidelines, and establishes that NFTs will fall under Class 9 of the referred classification. Also, the term “downloadable digital files authenticated by non-fungible tokens” will be added to the Class 9 of the 12th edition of Nice Classification which will be released in 2023.¹⁰² Therefore, a NFT registered as a trademark to the EUIPO would profit from the protection granted by the EU Trademark Regulation (ii).¹⁰³ However, there has been an increasing number of trademark infringements because of NFTs (i).

i. NFTs and trademark infringements; illustration through Hermès case

As far as trademark law is concerned, which may seem surprising when talking about art, the *Hermès case*¹⁰⁴ seems to be a relevant example. Trademark law governs the use of a device (including a word, phrase, symbol, product shape, or logo) by a manufacturer or merchant to identify its goods and to distinguish those goods from those made or sold by another. Service marks, which are used on services rather than goods, are also governed by this area of law¹⁰⁵. In fact, "intellectual property owners should add the metaverse to the places to watch for potential infringement, especially trademark or copyright infringement in the form of non-fungible tokens (NFTs)",¹⁰⁶ as highlighted in the *case of Hermès International v. Mason Rothschild*, currently pending in federal district court in

¹⁰⁰ OFFICE DE L'UNION EUROPÉENNE POUR LA PROPRIÉTÉ INTELLECTUELLE (EUIPO) [online]. Available at : <https://euipo.europa.eu/ohimportal/fr> (accessed on 2/06/2022).

¹⁰¹ The Nice Classification is an international classification of goods and services for the registration of trademarks

¹⁰² MOORE, Leo, SCANNELL, Barry, CULLIGAN, Roisin, GALLAGHER, Jane “European Union: Brand Protection In The Metaverse: EUIPO Updates Guidance On Trade Mark Applications For NFTs And Virtual Goods” (online) 15 July 2022, available at: <https://www.mondaq.com/ireland/international-law/1212162/brand-protection-in-the-metaverse-euipo-updates-guidance-on-trade-mark-applications-for-nfts-and-virtual-goods> (last accessed 29.08.2022)

¹⁰³ REGULATION (EU) 2017/1001 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 14 June 2017 on the European Union trade mark, L 154/1, 16.6.2017

¹⁰⁴ HERMES INTERNATIONAL and HERMES OF PARIS, INC., Plaintiffs, v. MASON, United States District Court, S.D. New York, May 18, 2022, 22-CV-384 (JSR) (S.D.N.Y. May. 18, 2022)

¹⁰⁵ BITLAW “Trademark in the US” [online] available from Bitlaw website: <https://www.bitlaw.com/trademark/index.html#:~:text=Trademark%20law%20governs%20the%20use,also%20governed%20by%20Trademark%20law> (last accessed 30.06.2022)

¹⁰⁶ LODGE Deborah, SHYLOAH Daniel - “NFTs: New Frontiers for Trademarks” [online] March 18, 2022, available at: <https://www.iptechblog.com/2022/03/nfts-new-frontiers-for-trademarks/> (last accessed 07.05.2022)

New York. In this case, Hermès claims that NFTs called METABIRKINS—which allude to the iconic Hermès handbag BIRKIN (and trademark)—infringe and dilute the Hermès trademarks. As the article states, most NFTs are protected by U.S. copyright law as creative works and/or may be derivative works based on pre-existing copyrighted works. The NFTs may also contain or use trademarks.

In the *Hermès case*, digital artist Mason Rothschild created NFTs named METABIRKINS, which are based on Hermès BIRKIN handbags, but feature fur surfaces rather than polished leather. Rothschild began selling its METABIRKINS NFTs in December 2021. Its NFT sales reportedly exceeded \$1.1 million, with the most expensive METABIRKINS NFT selling for \$45,100.¹⁰⁷

As a result, on January 14, 2022, Hermes filed a complaint in the Southern District of New York alleging trademark and trade dress infringement, trademark dilution, false designation of origin, cybersquatting, trade dress infringement, and misappropriation under the federal Lanham Act and New York state law. In addition to alleging trademark infringement due to Rothschild's use of BIRKIN in METABIRKINS as a name for its NFT collection, Hermès complained that Rothschild committed infringement by using METABIRKINS as a domain name, as a handle on Twitter and other social media platforms, as a mark on NFT sales platforms and as a hashtag.

In its defense, Rothschild filed a motion to dismiss Hermès' complaint on the grounds that the METABIRKINS NFTs are artistic expression and commentary protected by the First Amendment,¹⁰⁸ and that no one would be confused or think that Hermès sponsored or endorsed its shaggy images. His brief argues that the Hermès handbags and trademarks are not infringed because the NFTs are "depicted covered in fur ... [which] comments on the animal cruelty inherent in Hermes' manufacture of its ultra-expensive leather handbags". The brief also argues that the term METABIRKINS refers both "to the context in which he makes the art available (i.e., the online virtual environment popularly known as the 'Metaverse') and alludes to his work's 'meta' commentary on the Birkin bag and the fashion industry in general". It is precisely here that we see the connection to cryptoart. Rothschild emphasizes the artistic nature of his NFT, and he considers that this artistic expression should be free and should not constitute a violation of trademark law.

¹⁰⁷ Ibid.

¹⁰⁸ The First Amendment of the US Constitution provides that Congress made no law respecting an establishment of religion or prohibiting its free exercise. It protects freedom of speech, the press, assembly, and the right to petition the Government for a redress of grievances.

Rather than oppose the motion to dismiss, Hermès chose to amend its complaint. The amended complaint, filed on March 2, 2022, adds details about Rothschild's sales plans and marketing efforts, presumably in an effort to undermine its artistic commentary defense. The amended complaint highlights the growing importance of NFTs in the fashion and brand markets, and it accuses Rothschild of usurping opportunities that rightfully belong to the brand owner, Hermès.

NFTs are of considerable importance in the world of intellectual property. Although NFTs have been around since 2014, they have important legal consequences. Indeed, the *Hermès case* testifies to the concern of businesses and brand owners for the use of their intellectual property now that blockchain, digital currency, and NFTs are going mainstream. "Once again, technology has overtaken the normal legal rules and lawyers need to catch up".¹⁰⁹

ii. Benefits of protecting NFTs through trademark law

On the other hand, according to attorney Michael E. Kondounis,¹¹⁰ specialized in US trademark law, "The best way to protect an NFT is to trademark the name and logo you use to brand it. Trademarks protect brands, including NFT brands. The best way to protect your NFT name is to trademark it". According to him, it is possible to "legally protect your NFT name with a trademark. Registering your NFT's name is the official confirmation that you are the legal owner of the name. Confirming legal ownership of your NFT's name builds customer confidence in the authenticity of the asset represented by your NFT". What is interesting is that according to this lawyer, it is possible to trademark NFT-related services such as "the online provision of non-downloadable virtual goods, namely digital art, photographs, videos or audio recordings featuring the creation of online retail stores". This is a first step towards the protection of digital art NFTs by trademark law. We can see that in the examples cited by the lawyer regarding companies that have sought trademark protection for their NFTs is Warhol, who is an artist. Protecting an NFT through trademark law has many advantages, he says:

¹⁰⁹ LODGE Deborah, SHYLOAH Daniel, op.cit.

¹¹⁰ KONDOUNIS, Michael, "NFTs and Trademarks: THE ULTIMATE GUIDE", [online] available at <https://www.mekiplaw.com/nfts-and-trademarks-the-ultimate-guide/> (last accessed 06/06/2022)

- Registering your NFT mark ensures that your name and logo do not conflict with existing registrations. Thus, the trademark registration process confirms that your NFT name and logo do not infringe on any existing trademarks for NFT and are available for your exclusive use.
- Registration of your NFT mark will prevent anyone else from registering the same or similar name for their NFT. Generally, only one person can own a mark in an industry, including NFTs. So, by registering your NFT name, you ensure that no one else can register it and take it from you.
- By trademarking your NFT, you increase its value and that of the property it represents.
- Trademarks guarantee authenticity, which increases confidence in your brand.¹¹¹

Even though there are, for now, no relevant case law at an EU scale concerning NFTs and trademarks, the *Hermès case* and the recent EUIPO's guidance note show that there are two sides of the coin concerning the relationship between trademark law and NFTs. On one hand, they have been, on many occasions, claimed to be violating trademark law by companies. On the other hand, concerning their protection through the Metaverse and online, one can think about registering his NFT as a trademark, which will be facilitated thanks to the recent communication from the EUIPO.

Finally, in more concrete cases, NFTs can challenge a person's image or data

c) The application of general data protection rights

In addition, if the NFT uses a person's image without that person's permission, it may violate the person's privacy and data protection rights.¹¹²

Finally, there are many implications NFTs could have in the near future.

¹¹¹ KONDOUNIS, Michael, op.cit.

¹¹² Regulation 2016/679 "GDPR", op. cit.

B. Future applications of NFTs beyond cryptoart

The use-cases of NFTs go beyond just tokenizing art and collectibles.¹¹³ NFTs could even be used in DeFi. The latter is a financial system based on blockchain technology, and because NFTs, offer flexibility for proving ownership, they could serve exceptional value advantages in the domain of DeFi, when the latter helps to unlock the value of a specific asset.¹¹⁴

Also, as we've already mentioned, NFTs allow companies to reshape marketing strategies, offering new opportunities for brands to build closer relationships with their community.¹¹⁵

4. CONCLUSION

In conclusion, the phenomenon of lack of regulation around these crypto-assets, while it may cause a situation of legal uncertainty in some respects, is compensated by the application of some existing provisions of European law, thanks to the adaptability of these. However, this does not mean that the European legislator should not make an effort to regulate the technologies underlying blockchain, as they are destined to have an impact on many areas in which the European Union has the power to regulate. Thus, at the same time, this would make it possible to guarantee a harmonization of the normative frameworks of the respective Member states in the apprehension of these technologies in order to avoid certain situations of instability mentioned in this report.

However, the challenges faced by legislators in regulating cryptocurrencies and NFTs remain numerous. On the one hand, these technologies are evolving very quickly and are being applied in a growing number of areas. The case of NFTs is particularly demonstrative of this observation with the arrival of the metaverse. On the other hand, the decentralized model of the blockchain on which these crypto-assets are based breaks up with the centralized model generally established in many sectors.

¹¹³ HOR Benjamin, WIN WIN Khor, LEE Shaun Paul, YAP Dillon, HONG Chin Yi, op.cit. 160

¹¹⁴ IREDALE, Gwyneth, "How Can NFTs Be Used In DeFi (Decentralized Finance)?" [online] September 15, 2021, available in the website 101 Blockchains: <https://101blockchains.com/nft-and-defi/> (last accessed 31.07.2022)

¹¹⁵ HOR Benjamin, WIN WIN Khor, LEE Shaun Paul, YAP Dillon, HONG Chin Yi, op. cit. 171

This effort of regulation has already been initiated, especially in the financial sector with regard to cryptocurrencies, through the MiCA regulation, which does not apply to NFTs. As for NFTs, whose creation and popularization it is chronologically posterior to cryptocurrencies as an extension of the latter, we have seen that there is, for the moment, no European provision specifically targeting them. However, we can mention the Directive 2019/790 on copyright in the Digital Single Market known as “DAMUN”, which could be applied to online platforms selling NFTs, allowing to reduce the cases of copyright infringement via the latter thanks to a liability system. Also, the EUIPO's recent guidance note shows the growing interest of the EU to regulate these crypto-assets under the prism of trademark law.

Moreover, I consider that this internship in the firm of Vovan & Associés has allowed me—in a modest way—to contribute to the representation of France, a Member state of the EU, in a foreign country by helping Dr. Amoussou to prepare this conference (*see Annex V*), held mostly in French. The conference was organized and supported by the UFE Thailand (Union of French people abroad), which has a very large French community in Bangkok. The association aims at defending the interests of the French abroad, and it intervenes in the organization of many cultural events. Now, after having familiarized myself with the world of these new technologies emerging from the blockchain, I realize that it is almost of public order to warn the individuals on the risks which they comprise, while informing them on these last ones which take more and more place in our society.

Although these technologies are promising in many ways, the fact of having apprehended their workings allowed me to develop a critical reflection towards them. Indeed, the DNA of crypto-assets, what makes them specific, is their ability to escape intermediary structures. However, this phenomenon of regulating them jeopardizes this attribute for which their users were originally interested in them. In other words, the fact that public institutions are taking over blockchain could mark the end of blockchain as we knew it in the first place, making it obsolete, as the people interested in blockchain are trying to escape public authorities.

5. GLOSSARY

Terms	Definitions
AI	The study of how to produce machines that have some of the qualities that the human mind has, such as the ability to understand language, recognize pictures, solve problems, and learn. ¹¹⁶
Bitcoin	<p>The first example of blockchain has already made a lot of news as it is Bitcoin, a payment system through the internet network. Created in 2009 by Satoshi Nakamoto, Bitcoin quickly became an iconic virtual currency that is exchanged directly between users via the blockchain. The creation of a Bitcoin address ensures anonymity (parties are represented only by a public key) and transparency. The transfer of currency is very fast (almost immediate), irrevocable and secure, as the system verifies that the currency exchanged is valid.</p> <p>Bitcoin is not an electronic currency, but a virtual currency, i.e., an "unregulated dematerialized currency, created and controlled by its developers, used and accepted among a community of users" (European Central Bank, 2012). A virtual currency is not issued against the delivery of funds (banknotes, coins, scriptural money, electronic money...), but through an algorithm.</p> <p>Because Bitcoin is not regulated by monetary institutions, is not produced by any government and operates on a peer-to-peer network, it is completely decentralized. The currency is held directly by the users themselves, with no bank involved in the payment or transfer of money.¹¹⁷</p>

¹¹⁶ "Definition of Artificial intelligence" [online] available at: <https://dictionary.cambridge.org/fr/dictionnaire/anglais/artificial-intelligence> (last accessed 06.07.2022)

¹¹⁷ FERAL- SCHUL Christiane, Definition of the "Praxis" textbook of Dalloz, Chapter 532 - Current Regime of Cryptology - 2020-2021

Blockchain	<p>The European Parliament, through a resolution on virtual currencies adopted on May 26, 2016, defined blockchain as a set of blocks integrated into a system sharing a common database.¹¹⁸</p> <p>The term blockchain is derived from English and literally means a "chain of blocks". It is a computer system composed of "blocks" that represent all transactions passed between its users. It refers either to the technology that allows "the storage and transmission of information" or "a database that contains the history of all exchanges made between its users since its creation". Each new transaction, for example the purchase of a good or the authentication of a document, is validated and then recorded in this register, which is by nature impossible to erase. This register of transactions is held and supervised by its users (known as miners), based on a concept known as "decentralized trust". It is the "miners" who validate each modification of the blockchain, of which they all have a copy, thanks to powerful mathematical calculations operated by their computers. In passing, they take a small commission. The transactions are thus carried out without a centralized actor, without intermediaries.¹¹⁹</p>
Copyright	<p>Copyright is one of the two branches of literary and artistic property law alongside neighboring rights. The notion of intellectual work, subject of copyright, is imprecise. It has thus been ruled that the flavor of a food product cannot be qualified as a work, as it is not possible to obtain a precise and objective identification of the creation in question (CJEU Nov. 13, 2018, aff. C-310/17). In order to qualify for protection, the creation must be original, i.e., according to a classical conception, bear the imprint of the author's personality.</p>

¹¹⁸ European Parliament resolution of 26 May 2016 on virtual currencies, op. cit., 15

¹¹⁹ FERAL- SCHUL Christiane, op. cit.

	<p>As a corollary of the principle according to which ideas are free to travel, the creation must also meet the requirement of a form, or rather the concretization of the artistic concept, without this work being necessarily completed. The law lists fourteen categories of works of the mind. Copyright is made up of moral rights and economic rights.</p>
Crypto-asset	<p>Digital assets that it utilizes cryptography, peer to peer networking, and a public ledger to regulate the generation of new units, verify the transactions, and secure the transactions without the intervention of any middleman.¹²⁰ Also, crypto-assets are referred as “one of the major applications of Blockchain technology in finance” in the Proposal for a regulation of the European Parliament and of the Council on Markets in Crypto-assets, and amending Directive (EU) 2019/1937, “MiCA”, which aims at setting a specific European framework for stablecoins and "virtual asset service providers" (VASPs).</p> <p>According to an article of doctrine,¹²¹ these crypto assets include cryptocurrencies and tokens.</p>
Ethereum	<p>Ethereum is a “technology that's home to digital money, global payments, and applications”.¹²² The Ethereum community “has built a booming digital economy, bold new ways for creators to earn online (...) It's open to everyone”, with an access to internet as the only prerequisite.¹²³</p> <p>To execute instructions on the Ethereum Blockchain, computing power is required. This computing power is</p>

¹²⁰ PAHWA, Aashish “What is a crypto asset? Types of Crypto Assets [Ultimate Guide]” [online] January 15, 2022, available in the website feedough.com in <https://www.feedough.com/what-is-a-cryptoasset-types-of-cryptoassets-ultimate-guide/> last accessed 23.02.2022

¹²¹ FAVREAU Amélie, BARON Richard, BARBAROUX Nicolas, “Blockchain et finance – approche pluridisciplinaire – Les actifs numériques – Juin 2020, pp.125

¹²² Ethereum website, op. cit.

¹²³ Ibid.

	<p>provided by the participants in the network. These are individuals or companies who decide to make their computer available to the network to run the blockchain. They are remunerated for this, by the granting of Ether. What makes these Ethers valuable, besides the fact that they can be exchanged as a currency on a market platform, is that they can be exchanged for gas, which is needed to execute contracts. In practice, the exchange is done automatically: when you execute a contract, it costs you a fraction of an Ether corresponding to the cost of gas. Thus, to execute a contract you need to own Ether, and to own Ether you need to either participate in the network or buy it from the participants, who make the contracts work.¹²⁴</p>
Decentralized Finance	<p>DeFi is an ecosystem that allows for the utilization of financial services such as borrowing, lending, trading, getting access to insurance, and more without the need to rely on a centralized entity.¹²⁵</p>
Distributed ledger technology	<p>DLT is “a novel and fast-evolving approach to recording and sharing data across multiple data stores (or ledgers). This technology allows for transactions and data to be recorded, shared, and synchronized across a distributed network of different network participants”.¹²⁶</p>
Fintech	<p>Refers to the confluence of “finance” and “technology”. It describes companies or innovations that employ new technologies to improve or innovate financial services. We can observe such developments across all areas of the financial sector, “including payments and financial infrastructures, consumer and SME lending, insurance, investment</p>

¹²⁴ POLROT, Simon “Qu’est-ce qu’Ethereum ?” [online] from the website <https://ethereum-france.com>

¹²⁵ HOR Benjamin, WIN WIN Khor, LEE Shaun Paul, YAP Dillon, HONG Chin Yi, op. cit. 200

¹²⁶ World Bank Document FinTech Note, op.cit. 4

	management, and venture financing develops innovative digital technology to optimize a financial service”. ¹²⁷
JPEG	JPEG relies on an algorithm that allows it to significantly reduce the amount of data. Currently, JPEG is a compression method that it is most commonly used in jpg, jpeg, but also in other less common formats like jpe or jif. When you use the JPEG format in photography, you will be able to find a balance between the size of the photo and the quality of the image.
Metaverse	A virtual reality environment where users can interact with one another. ¹²⁸
Non fungible Token	“In simple terms, an NFT is a token that possesses a unique identifier and has additional parameters that allow you to store certain information on it. That unique identifier is what makes a token non-fungible. The additional information can be any information such as text, images, audio, and videos files. Unlike fungible cryptocurrencies, NFTs are unique and not interchangeable. Since each Bitcoin or Ether is uniform and practically indistinguishable from the other, you can freely trade them on cryptocurrency exchanges without much hassle”. ¹²⁹
Proof-of-Stake	PoS describes one of the many existing consensus mechanisms based on a distributed ledger. ¹³⁰ According to the distributed nature of blockchain, the participants of the network (represented by nodes) “to reach a consensus regarding the validity of the new data entries by following a set of rules”. ¹³¹ In PoS, the participant must prove ownership of a certain asset

¹²⁷ Ibid.

¹²⁸ HOR Benjamin, WIN WIN Khor, LEE Shaun Paul, YAP Dillon, HONG Chin Yi, op.cit., 206

¹²⁹ Ibid.

¹³⁰ World Bank Document, op. cit., 6

¹³¹ Ibid.

	(a certain amount of coins in the case of cryptocurrencies) in order to participate in the validation of transactions. ¹³²
Proof-of-Work	PoW is also a consensus mechanism. In a PoW system, network participants have to solve so-called “cryptographic puzzles” to be allowed to add new “blocks” to the blockchain, which means these cryptographic puzzles are made up out of all information previously recorded on the blockchain and a new set of transactions to be added to the next “block”. ¹³³
Smart contract	<p>The smart contract is a computer program whose function is to automatically form, execute or extinguish a contract that, in any case, is not confused with it. This algorithmic program is distinguished by the fact that it operates within the framework of a blockchain.</p> <p>Operating in the mode of condition (if.../then...), it draws the consequences of a sequence of information recorded on the blockchain. Each event registered on the network is then likely to cause another one, as soon as a smart contract is programmed to do so. Basically, the smart contract is superimposed on a traditional contract and automatically ensures its formation, execution, or termination. For example, it can be used to mechanically execute insurance contracts, transport contracts, betting contracts, loan contracts, shareholders' agreements, or preference agreements.¹³⁴</p>
Stable coins	Stable coins are digital units of value that differ from existing forms of currencies (e.g. deposits, e-money, etc.) and rely on a set of stabilization tools to minimize fluctuations in their price against a currency. ¹³⁵

¹³² Ibid.

¹³³ Ibid.

¹³⁴ GUERLIN Gaëtan, “Considérations sur les smart contracts” Dalloz IP/IT 2017. 512

¹³⁵ ECB Crypto-Assets Task Force, op.cit., 3

Tokenization	Tokenization is the act of using a smart contract (i.e., a computer program) to create a token that is then anchored in a blockchain. This means that a computer program is used to create a digital asset that can be transferred from one person to another. The process of creating a digital asset with a smart contract is called "minting". The smart contract allows you to represent any IP, e.g., trademarks, designs, patents, or copyrights, with a token. ¹³⁶
Unicorn company	Startup with a valuation over \$1 billion. ¹³⁷ There's an increasing number of Unicorns represented by Fintech companies, hence the link between them. ¹³⁸

¹³⁶ WILKOV Neil, op.cit.

¹³⁷ Hirst, Scott; Kastiel, Kobi, op.cit.

¹³⁸ "\$1B+ Market Map: The world's 1,170 unicorn companies in one infographic" op.cit.

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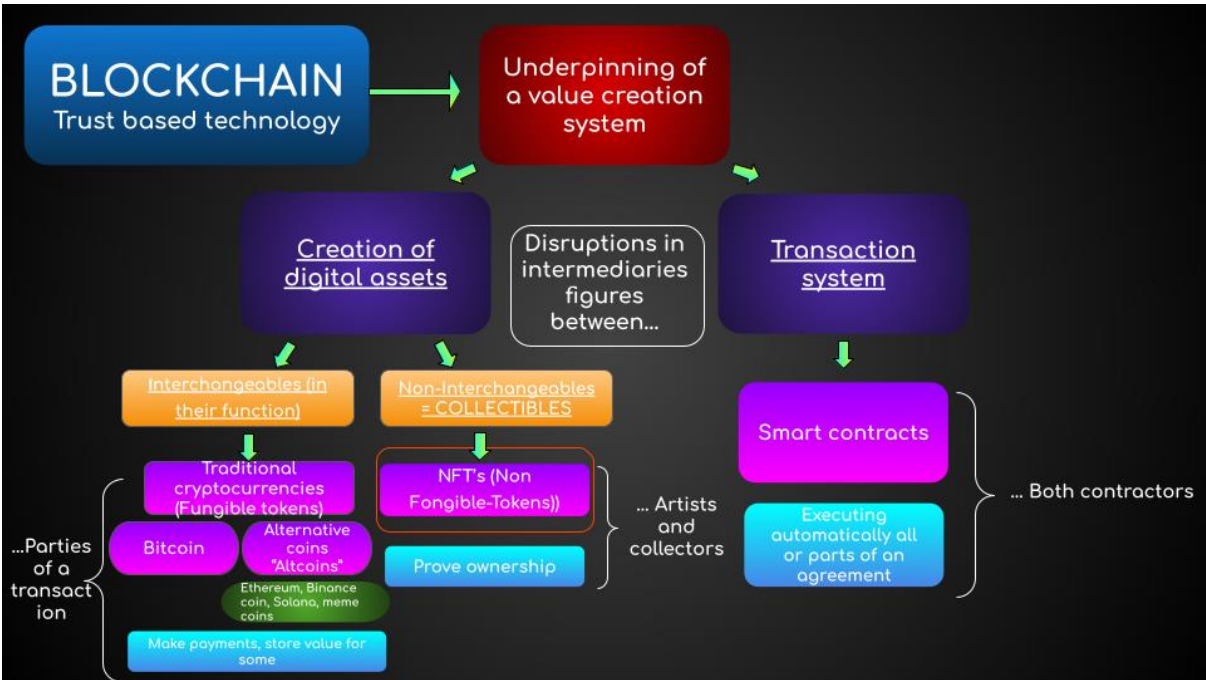
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7. ANNEX



(Annex I)

Crypto art: a fashion or a reality? Theoretical approach

01 02 03 04

Fungible and non-fungible

The key element of NFTs is their **uniqueness**, as they are not exchangeable

In addition to their differing functions, cryptocurrencies and NFTs differ in whether they are **fungible**, i.e. whether they can be exchanged. While crypto-currencies are fungible, in the sense that **1 Bitcoin = 1 Bitcoin**, an NFT is unique and cannot be replaced by another, hence its acronym: non-fungible token

Exemple of fungible	Example of non-fungible
Traditional cryptocurrencies	NFT
Euro, Dollar	Work of art
Gold as a currency	Building

(Annex II)

Qu'est-ce qu'un NFT? Une nouvelle expression de la blockchain dans le domaine de l'art par la non fongibilité 01 02 03

Transformation de la définition juridique en NFT: Le Juriste devient crypto artiste




(Annex III)

Crypto art: a fashion or a reality? Theoretical approach 01 02 03 04


What do you own when you buy an NFT?

The creation on the blockchain of a property title with all its attributes



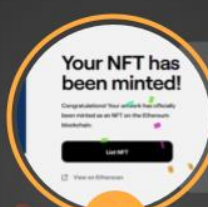
The Mona Lisa by Leonardo da Vinci, on display at the Louvre

Estimated between 1 and 2 billion euros



Poster Mona Lisa 61cm x 91cm printed on glossy paper


Sold at 15€90 on Cdiscount



Your NFT has been minted!

Original digital artwork by Beeple tokenised on the OpenSea platform

Digital certificate of authenticity sold for \$697 billion



The JPEG of the work can be downloaded by doing a simple Google image search 'Beeple the first 5000 days'.

100% free!

NFT is a title to ownership of a digital asset

(Annex IV)



(Annex V)

