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***NFTs through the lenses of the  
author's rights: a view of challenges  
and opportunities in the art world***

**Supervisor**

Ch. Prof. Alessandra Zanardo

**Graduand**

Sofia Braioni

Matriculation Number 883161

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## Abstract

NFTs have already been defined as a disruptive technology, an innovation capable of reinventing existing industries, or even creating new ones. The years 2020 and 2021 revealed themselves as crucial for the true characteristics and the tremendous potentials of this technology bringing to the attention of a global audience.

At the *fons et origo* of this revolution there are blockchain and smart contracts: both are conceptualized as alternative systems by introducing firstly the principles of decentralization and automatization of processes. They constitute, as well, the pillars above which is added the non-fungibility, the idiosyncratic quality of NFTs, presenting the groundbreaking notion of scarcity in the digital sphere.

Looking at the creative world of artists, and more in particular visual arts, it is evident the reason why this innovation aroused wide interest and curiosity, since it can be interpreted as an important solution to many inefficiencies or difficulties in the current author's rights system. Namely, particularly fascinating is the possible ease of application of the resale right, which allows creators to get an automatic and predetermined compensation every time a future sale of the work is made. This prospect opens to a profound and radical change in the way artists can approach the market, by not relying anymore only on the first purchase, but rather on the subsequent ones, allowing therefore a more affordable initial proposition to buyers.

Indeed, new critical circumstances are rising too, straining copyright laws by forcing them to face unprecedented and unseen situations.

Throughout an overview of the underlying technology, this dissertation has the aim to present the challenges and opportunities that NFTs offer in the context of the author's rights while glancing at the art market.

## Introduction

One of the many words that has characterized the year 2021, besides facemasks and hand sanitizers, has surely been NFTs. Indeed, the Collins dictionary nominated it as the word of the year, while the Financial Times estimated for them a market valuation around 40 billion dollars only in those twelve months. A true discovery of the technology and its versatility has been realized, leading to a wide appreciation for the many intrinsic attributes and their possible applications in many fields and sectors, which brought consequently to the global phenomenon and trend known today.

The conditions *sine qua non* for their success are undoubtedly rooted in blockchain and smart contracts, constituting as a matter of facts the mainstays of the NFT technology. Specifically, blockchain can be basically defined as a digital decentralized ledger, distributed on a network, and structured as a chain of records. It was conceptualized on many principles, *inter alias* being an open, neutral, and secure system, archived by relying on mathematical calculations and protocols. The result has been undeniable fascinating, presenting an immutable and transparent registry, where any kind of information is written in a chronological order without the possibility of being controlled or manipulated by other parties.

Smart contracts instead advance the notion of automatization, fundamentally the certainty of predetermined consequences upon the verification of clearly defined events. A simple concept applied in many scenarios, popularized for example with the vending machines, but if taken in juridical frameworks or business deals can be truly game-changing. As the provisions and clauses are performed in a self-executing way and independently of the individuals' will, the counter-party risk of insolvency or breach in the agreements are eliminated, or at least strongly reduced.

A sensational breakthrough was furthermore archived with the combination of the two, since the conditions embedded in the smart contract, usually coded with an "if..., then..." logic, become visible and non-repudiable through the blockchain' transparent ledgers.



Indeed, many other steps were taken in this direction with the elaboration of different standards, which ultimately introduced the wide array of crypto assets existent today.

Among them, NFTs could be considered as one category, differentiating themselves for mainly three characteristics: uniqueness, indivisibility, and non-interchangeability. The possibility to identify univocally the underlying asset, may it be physical or digital, and to keep track of the token's circulation are two of the many reasons that brought to their enormous success. Their peculiarities and potential charmed many markets, first of all the art one, finding an undeniable compatibility between the necessities of the sector on one side and the offerings of the technology on the other.

The spectacular suitability of NFTs, particularly in the visual creative industries, however posed many questions on a juridical level in relation to the author's rights, raising impressive opportunities as well as numerous challenges. Particularly, it is extremely interesting to observe the Italian legislation on the protection of both the economic exploitation rights and the moral ones in the non-Fungible crypto context.

It will be observed the remarkable easiness of NFTs in the applicability of the resale right, an entitlement which has always been consternated by a difficult and limited recognition in the off-chain world. With the guarantees provided by the technology, now there is concrete possibility for its true realization, revealing hence the aptness for a revolution in the dynamisms and paradigms of the art industry.

# **CHAPTER ONE**

## **BLOCKCHAIN TECHNOLOGY**

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- 1. The definition**
- 2. Modus Operandi**
- 3. Blockchain's network: structure and models**
- 4. The birth and blossom**

### **Introduction**

In just more than a decade blockchain experienced a significant growth in popularity, due not only to the technology itself, the values and core principles at the base of it, but as well all the possible applications and uses that can be implemented in many fields and industries.

This innovation has captured the interest of a global audience, who is currently fascinated by the potentials and opportunities that can be archived: many scholars are studying this technology, the challenges, the future, and consequently the literature is thriving. Experts, but not only: consumers, businesses, lawmakers, private and public entities, at national and international level are talking about blockchain technology.

But what exactly is blockchain technology and how it all started?

## 1. The definition

Many definitions were given to blockchain, depending on the focus of the authors. Some of them centered it on the underlying technical aspects, others on the implications to society and businesses.

As Andreas Antonopoulos explained blockchain can be easily compared to nature: both are extremely complex and sophisticated systems that yet rely on the aggregation of simple elements.<sup>1</sup>

Taking for example human beings through a chemical point of view or the interaction among animal groups through pheromones, nature in fact can create complicated structures by relying on basic components. Blockchain as well can be described as a network that combines a big number of machines, where each one of them follows a set of few simple mathematical rules.<sup>2</sup>

Blockchain is a digital ledger decentralized and distributed on a network, structured as a chain of records (“the blocks”) which are responsible for data registry.<sup>3</sup>

As already mentioned and demonstrated by the definition, blockchain isn’t a straightforward concepts. On the contrary it is composed by peculiar elements and notions. Analyzing them, it is necessary to keep in mind one of the main objectives of the technology: to store information. It can be of many kinds, from a simple purchase transaction to entire programs.

A denotation and delimitation of the word ledger is the starting point. A ledger is an instrument used to register transactions. This tool is known long before blockchain, it was in fact used by businessmen since the beginning of commerce in order to keep track of the numerous balance accounts, for example of customers and suppliers. With time,

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<sup>1</sup> ANTONOPOULUS M.A., *Mastering Bitcoin, Programming the open blockchain*, Sebastopol CA (USA), O’Reilly Media Inc, 2<sup>nd</sup> edition.

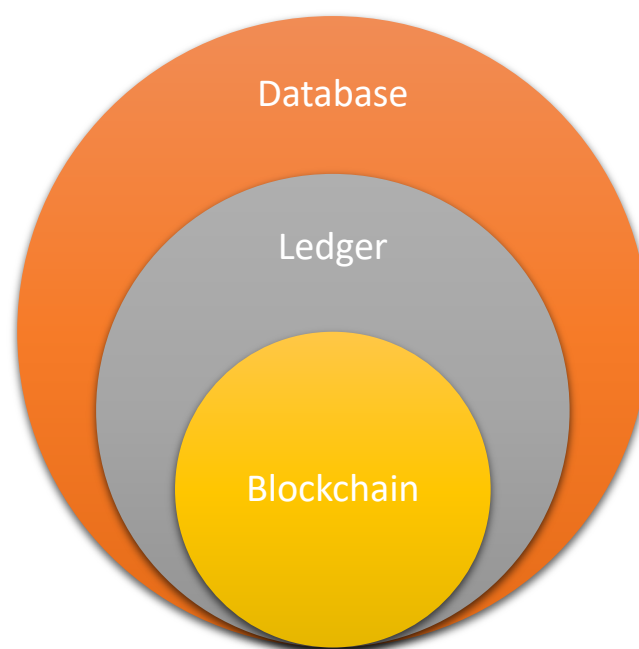
<sup>2</sup> CHIAP G., RANALLI J., BIANCHI R., *Blockchain tecnologia e applicazioni per il business*, Milano, HOEPLI, 2019.

<sup>3</sup> CHIAP G., RANALLI J., BIANCHI R., (nt. 2).

the technology around it evolved but the concept of ledger has not changed: from a papery form it transformed in a digital one.

It is often confused with another term in particular i.e. database. At the core of both technologies the idea of data storage in a registry is the same, but in a database it is always possible for a user to add, modify or cancel information, while in a ledger it is not. As a matter of facts only new information can be added, and once written they cannot be amended or removed.

Therefore, ledgers can be thought as databases with constrains (Figure 1).



*Figure 1. The relation and difference among databases, ledgers and blockchain.<sup>4</sup>*

Figure 1 anticipates and shows that blockchain has even more peculiar characteristics than databases and moreover ledgers. Due to cryptography, decentralization, and consensus protocols, the scope and potential of blockchain goes even further than the mere information holding. It archives indeed the security and immutability of the records.

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<sup>4</sup> CHIAP G., RANALLI J., BIANCHI R., (nt. 2).

Having a broader view, it is worth mentioning that databases and blockchain are nowadays used in different contexts and they are conceptualized to face dissimilar problems. A traditional database requires a careful and controlled access system: the users allowed must be known and trusted parties. Blockchain instead relies on the concept of being an open structure, where there isn't the necessity for the parties that operate in to be known and trusted among them.

One of the pillars of blockchain is in fact being an open, neutral, secure, and reliable system, where the possibility to enter it is not limited by the will of any individual or institution.

From a structural point of view, hence blockchain's core is a digital ledger, a virtual registry that contains and report faithfully and accurately all the information. Going further and deeper, this is enabled by the so called "chain of blocks" (Figure 2), these units are the ground on which blockchain technology arises.

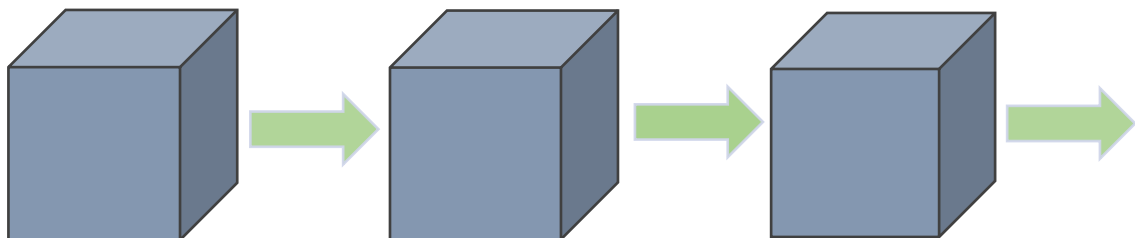


Figure 2. The chain of blocks<sup>5</sup>

In Figure 2, the cubes represent the blocks in which information is stored, they are precisely responsible and accountable for data recording. The arrows besides indicate

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<sup>5</sup> CHIAP G., RANALLI J., BIANCHI R., (nt. 2).

the relation between the units in the chain, data is added sequentially through time and, as it will be explained in paragraph 1.2 *Modus operandi*, each block is specifically linked with the previous one. Additionally, the one-way arrow highlights the fundamental characteristic of immutability, where only new blocks can be created and once that happens, they cannot be removed, amended, or altered in any way.

In other words, blockchain is a collection of encrypted information recorded chronologically by a network of computers.<sup>6</sup>

## 2. *Modus Operandi*

Blockchain technology promises a distributed database, free from tampering and revisions, that records information sequentially through time<sup>7</sup>. Basically, it ensures and guarantees that every time a valid transaction is made, it is faithfully and digitally written in a ledger.

Extremely interesting is analyzing how, as a matter of facts, data is stored in this registry, precisely how immutability and uniqueness of records are archived.

As it was anticipated in Figure 2, blockchain is structured as a “chain of blocks” and pictured as a concatenation of information linked linearly by arrows. Moreover the cubes, later identified as the blocks, can be described as containers of data that include the details of a transaction, a connection to the preceding block and a complex mathematical puzzle.<sup>8</sup>

The first block of every blockchain is called genesis block, and it constitutes the starting point from which all the successive blocks will be built.<sup>9</sup> Following the initial one, blocks

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<sup>6</sup> A. WRIGHT, P. DE FILIPPI, *DECENTRALIZED BLOCKCHAIN TECHNOLOGY AND THE RISE OF LEX CRYPTOGRAPHIA*, [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2580664](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2580664).

<sup>7</sup> J. H. WITTE, *THE BLOCKCHAIN: A GENTLE INTRODUCTION*, [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2887567](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2887567).

<sup>8</sup> A. WRIGHT, P. DE FILIPPI, (nt. 6).

<sup>9</sup> ANTONOPOULUS M.A., (nt.1).

are connected between them in a straightforward and unidirectional way. This indissoluble link is realized by the so-called hash function, which is cryptographic mathematical calculation. It is in fact particularly useful, as it allows to transform any kind of information of any type or format into a data model of fixed dimensions. In other words, the inputs of a hash function can be files, spreadsheets, images, even music or entire programs, and the output will always be a predetermined quantity of bits, specifically a string of numbers and letters called hash.

The peculiar mathematical function has other admirable qualities as well, such as being deterministic computation, which means that the same input will always give the same output. Additionally, if there is even the tiniest change in the raw data, after the calculation the result will be completely different.

It is also considered a one-way cryptographic function because it is operationally easy to obtain an output starting from an input, while it is very complicated, or infeasible, to reverse the process. It means that, having only the hash, the only method to get to the original data is to try all the possible combinations as it doesn't exist an inverse equation. All the characteristics and technical features of the hash function allow the possibility for any digital file to be identified in a univocal and unambiguous manner, to the point that the hash code can be confidently compared to a virtual fingerprint.<sup>10</sup> The implications that derive from the latter are important and relevant, as well as useful and practical in the blockchain world. For instance, it becomes very easy to establish if a file has been altered, since any modifications in the underlying data causes a change of its relative hash code. On top of that, the detection of any variation will be faster because it is no longer necessary to compare every single little detail of the document under scrutiny, as the output string will be completely different. If this potentiality seems convenient for example for papers of only few pages, it becomes clearly essential when talking about the entire state of a blockchain.

On that matter, Figure 3 visibly presents how hash codes are integrated in the structure of a block, in particular how they link blocks and how they identify specifically one. If in

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<sup>10</sup> CHIAP G., RANALLI J., BIANCHI R., (nt. 2).

paragraph 1.1 the representation of a block was generally a cube, in this section it will be taken a closer and deeper look at one.

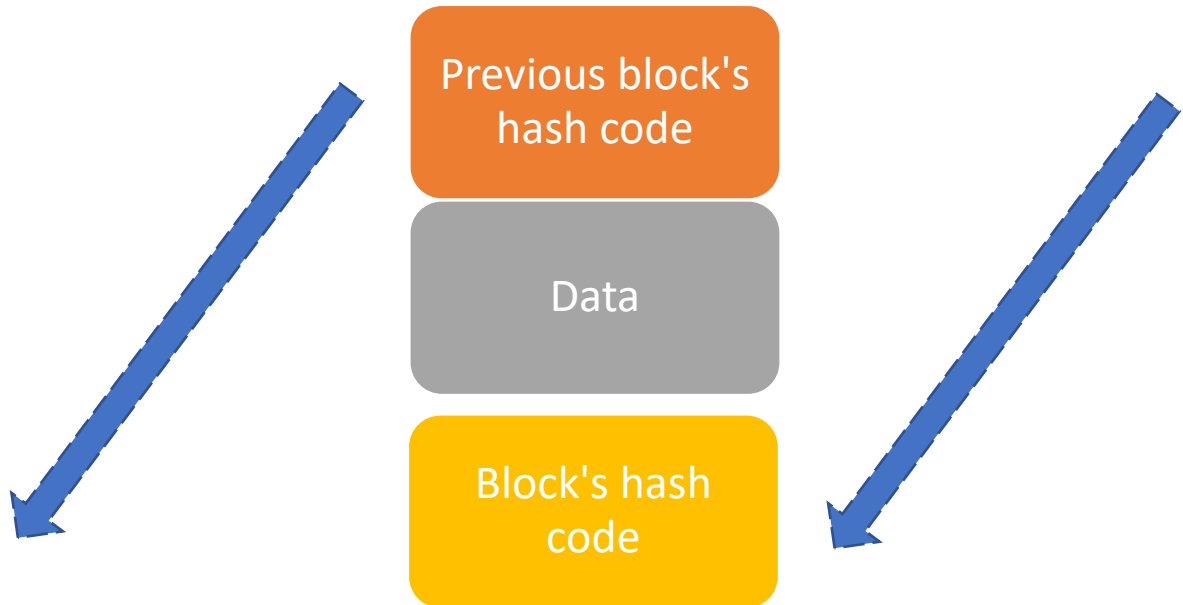


Figure 3. The structure of a block<sup>11</sup>

As Figure 3 depicts, there are three core elements in a block: the previous block's hash code, the additional data and lastly the block's hash code. The first part reports faithfully and exactly the string of numbers and letters that corresponds to the preceding unit, thus allowing the creation of a connection with the previous structure. This link is also underlined and highlighted by the blue arrows in the Illustration 3. The second component is the new information that needs to be written in the digital ledger, in other words the deeds and details that will be further added to the chain. The third element is the entire block's hash code, i.e. the output that derives from the encryption of the first two parts, which not only distinguishes uniquely and exclusively that particular block, but in turn in the future will constitute the initial brick of the next one.

It is now clear and evident how blockchain can verify the authenticity of records: if anyone tries to modify or alter even the smallest specifics, the final code will be

<sup>11</sup> CHIAP G., RANALLI J., BIANCHI R., (nt. 2).



completely different, and hence it will be immediately recognized as a corrupted information. On the contrary, if a user compares the encrypted strings and determines a perfect match, it means that data is genuine and valid.

It should be heeded also that Figure 3 represents the typical structure of a block, it is in fact fundamental to notice that depending on the characteristics and scope of the blockchain in question few differences can arise. The dissimilarities mainly concern the dimensions or the types of information that can be stored in the block, while the concept of the chain of blocks and the mechanism by which it operates is widely shared.<sup>12</sup>

### **3. Blockchain's network: structure and models**

In the definition of blockchain given in paragraph 1.1, the characteristics of being a decentralized and distributed digital ledger were mentioned. This section indeed will explore and examine the details and meaning of these concepts.

One of core ideologies behind the technology is indeed to archive an open and reliable system, where the possibilities of action are not limited by the discretionary will of any individual or institution. This key value is reflected in a multitude of aspects and facets, but first of all it can be clearly recognized in the underlying structure: blockchain is in fact distributed on a network. The latter can be identified as a group of machines, connected among each other, that constantly exchange information through communication channels, such as internet. Moreover, a machine connected to a network is called node<sup>13</sup> (Figure 4).

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<sup>12</sup> CHIAP G., RANALLI J., BIANCHI R., (nt. 2).

<sup>13</sup> CHIAP G., RANALLI J., BIANCHI R., (nt. 2).

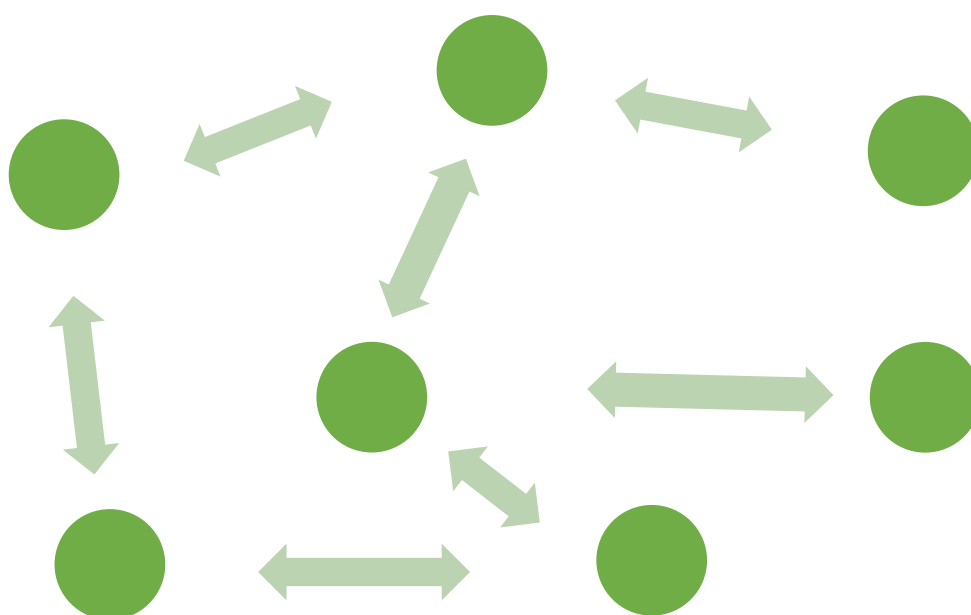


Figure 4. The communication among nodes in a network<sup>14</sup>

Figure 4 depicts an example of a network, where the circles represent the nodes and the arrows the communication channels.

Taking a further step and analyzing how these machines interact with each other and traffic data in the blockchain context, it is necessary to deepen the knowledge of nodes, particularly between full and light ones.

The first type downloads and locally stores a complete copy of the blockchain, moreover it controls that every transaction, and therefore block, correctly follows the protocols and the rules defined by the system. If an anomaly has been detected, for instance an attempt to alter information, the node will reject that block, despite the decision of validation made by the other machines. Thus, a full node is utterly independent, it doesn't need the trust or approval of any other participant of the network, as it always follows the established precepts: it confirms blocks when verified and it ignores the deceitful ones. As a consequence, the usage of a full node is considered safe if the scope and objective is to interface with the blockchain; on the other hand, the download of all information is required, and it could be judged as heavy and burdensome.

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<sup>14</sup> CHIAP G., RANALLI J., BIANCHI R., (nt. 2).

Differently, a light node does not memorize the entire blockchain, it receives instead only the needed data from a full node. The choice of the light form is made to have more easiness of use, but it comes at the price of trusting another node that has the capacities to check and verify the correctness of the information.

Moreover, additional considerations can be made looking at a network structure and the roles that every node has in it. First of all, it is possible to analyze the degree of centralization by relying on the concepts and levels of architecture, logic and authority. A centralized network from an architectural point of view is an infrastructure with a single point of failure, that if compromised it would take down the whole system. Taking for example an airplane with just one engine or, more suitably, a web application with only one server, if the condition of malfunction happens, it would mean a vital crash.

On the contrary, when the resources are diffused and dispersed on a multitude of nodes, there is a configuration of a decentralized network, such as Figure 4. As a result, all the participants are operationally active and engaged in the web application, thus excluding the possibility of having a single and highly sensible spot where the concentration of computational power and information is held. Indeed, this is the case of blockchain, a technology architecturally decentralized. In other words, if anyone wanted to shut down the entire system, that actor would need to deactivate all the nodes that constitute the network.

Differently, additional observations can be made analyzing a web through an authoritarian perspective. There are systems characterized by a control expressed centrally, namely when there is a leading entity in charge of defining the rules, sharing them, and even enforcing them. It is the main institution that decides what is right and allowed on the network and what isn't, and all the users need to entrust unconditionally that cardinal body if they want to use that service. Common and appropriate examples can be big tech firms such as Google, Amazon, or Facebook, or simply any bank, all systems that have a central authority and basically imposing terms of use with little or no room for negotiations, specifically for the data management. Blockchain, on this matter, fundamentally diverges, while defining itself as a network decentralized even from an authoritarian point of view. It means that all the nodes are considered as equal,

and no one detains the control of the structure or can censure the activity and actions of any individual.

Lastly, a digital infrastructure can be looked also from a logical perspective. A network logically centralized has, for every single moment, only one possible state. All the participants in fact need to agree on that particular state of the system in order to correctly function. It happens in fact when there is a common and shared database where the data is saved and stored. Aside from the latter, there is also the case of a network logically decentralized, which means that there can be as many and different copies of information as possible, because every node can modify their own replica without compromising the operational functioning of the system. In this regard, blockchain is defined as being a logically centralized network, that has only one possible logical state.

Other than the concepts of centralization and decentralization viewed from dissimilar facets and points of view, there is even the notion of a distributed network. The latter basically consists in replicating data and computations in more than one node, thus avoiding the usage of only one big server by rather allocating all the information in more places. It is an option adopted to respond to many necessities, mainly to minimize the risks of failure in the case of a crash, and it is independent from the authoritative choice of a network. Blockchain therefore corresponds even to the description of a distributed digital ledger, as every full node has an entire and complete copy of the chain of events. Retracing the many characteristics and definitions given on the blockchain's network structure, it results that it is a technology which has essentially only one possible state (hence it is logically centralized), it is architecturally and authoritatively decentralized while distributed on multiple nodes. However, this description corresponds more specifically to the most traditional model of blockchain, called public or permissionless. With time, many developers modified the original design to archive new systems that could embrace better various necessities of some industries by creating two more categories of blockchain: consortium and private.

In the first and original model, the decentralization is a key aspect, viewed as the *raison d'être*<sup>15</sup>, where indeed any point of centralization is considered a weakness, a potential spot for failure or control. It is an open network, everyone can join and participate without any kind discrimination for the users or contents. Moreover, all the nodes have equal rights and responsibilities, and even the possibility to check the validity of every transaction. The codes and rules are public and open to suggestions if improvements can be found.

Although public blockchains have unique and remarkable qualities, they could be considered not suitable in particular fields or industries, where a complete decentralization is sacrificed to have better performances or a restricted entrance and participation of users.

Private blockchains, called also permissioned, rely on having a controlled access system, where all the operations in the network are made by one or more selected and trusted parties. There is a verification process that vets and verifies users before admitting them, as the reliability and integrity of the participants is then reflected on the reputation of the network. More specifically, in private blockchains the control and authority are exerted by only one entity, while in consortium blockchains they are distributed among all the participants. Indeed, the latter is acquiring the interest and curiosity of governments, institutions, and companies, as it represents a hybrid option between the two extremes, a compromise that allows to keep some advantages of the technology while still maintaining a centralization. This model is convenient when, for example, there is the necessity of maintaining a certain degree of data confidentiality in a network, or when the intention is to create a collaboration system among autonomous firms.

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<sup>15</sup> P. CATCHLOVE, *SMART CONTRACTS: A NEW ERA OF CONTRACT USE*, [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3090226](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3090226).

## 4. The birth and blossom

The concept of blockchain was initially introduced by Satoshi Nakamoto in 2008 with the publication of a paper titled «Bitcoin: a peer-to-peer electronic cash system»<sup>16</sup>. This document, of only nine pages, explained and theorized the first decentralized trustless payment system through the combination of different technologies already existing and also by providing brilliant solutions to newly arising problems.

The author, whose true identity still remains unknown, conceptualized an alternative method that basically allowed people to exchange money electronically by not relying on any central authority in any form and by assuring constantly privacy and anonymity of the parties involved as well as traceability and transparency of transactions.

The idea of a virtual payment system however is not new: it dates back in 1994 with David Chaum and the creation of DigiCash. This system although still presented the necessity of having a central entity with clearinghouse functions.<sup>17</sup>

Eric Hughes, Tim May and John Gilmore also inspired Nakamoto with the notion of anonymity in digital networks. The three were in fact the founders of the Cypherpunk movement, which started as a mailing list concerned with topics such as privacy and data encryption and evolved in 1993 with the publication of the «Cypherpunk Manifesto».

Later on, in 1997, Adam Back advanced the idea of a system that could avoid the spam phenomenon. Named HashCash, it prevented the delivery of undesired emails in the inbox by making particularly difficult and burdensome all the computation necessary for the sender.

Another relevant contribution was made by Wei Dai in 1998 with the development of B-Money, that is a decentralized payment method secured by encryption and the so-called proof of stake. The latter is an element of newness that was introduced, and it

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<sup>16</sup>S. NAKAMOTO, *Bitcoin: A Peer-to-Peer Electronic Cash System*, <https://bitcoin.org/bitcoin.pdf>.

<sup>17</sup> M. PILKINGTON, *Blockchain Technology: Principles and Applications*, [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2662660](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2662660).

fundamentally incentivized the participants of the network to act with honesty, integrity, and faithfulness, putting at risk their own funds in case of validation of a fraudulent transaction. Simultaneously, Nick Szabo advanced new innovations, such as Bitgold, but more importantly he introduced and defined the concept of smart contract, to which is dedicated Chapter 2 of this dissertation.

Attention is also needed on the historical and cultural context of the 1990s in which these ideas take place. As technology was expanding and spreading in many aspects and fields, people were getting concerned over the possibility for governments and big corporations to monitor, track and control all the information and data collected on consumer's transactions. The access to these details could in fact allow them to exercise and affect decisions or even the lifestyle of individuals.

The worry of a possible infringement regarding freedom rights, and especially the right to privacy, fueled debates on the issue, that ultimately evolved and lead towards potential solutions. The ideal one was the establishment of new instruments and technologies that could serve the purpose itself, in this case a transaction, while at the same time allowing and guaranteeing the compliance with the principle of confidentiality regarding the personal information of users in the digital world.<sup>18</sup>

Following in 2004 Hal Finney, looking at HashCash, theorized another improvement of the system, the so-called proof of work, which was a new method used to validate transactions and still used nowadays in many blockchains.

Satoshi Nakamoto witnessed and deeply comprehended the events that marked those years, the arising problems and concerns that led different actors to discover new possibilities. Not only, he had a sharp and brilliant intuition by combining those ideas in an original way, bringing to light and shaping a new system. First of all, he structured a network on a peer-to-peer topology, which essentially means that all the nodes are considered as equals and at the same level, active computers that contemporarily process and store data, thus avoiding the institution of a central entity. Furthermore, transactions are registered using an asymmetrical encryption, very popular in 2008,

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<sup>18</sup> F. SARZANA, M. NICOTRA, *Diritto della blockchain, intelligenza artificiale e IoT*, Milano, Wolters Kluwer, 2018.

where fundamentally the integrity of the coded messages is ensured by two keys, a public and a private one. Additionally, he availed himself of the proof of work technology, a sophisticated system that has intrinsically the purpose of creating consensus about the state of the blockchain through the validation of transactions based on mathematical calculations. This method incentivized a wide participation of users with computational power and minimized, if not resolved, potential dangers of unethical or deviant behavior.

All the operations of the network are then meticulously registered in an immutable digital ledger, decentralized and distributed on all the nodes. Indeed, it is right on this matter that the cleverness and virtuosity of Satoshi Nakamoto manifested, by creating a complex that could overcome the double spending problem. In a cyber world, particularly in a virtual payment system, one of the main issues is indeed to avoid the possibility that anyone could use more than once the same resources. Traditionally this is resolved by a central body with clearing housing functions, an entity that keeps track of every transaction made and the relative net account balances. In a decentralized system this is more difficult to archive because there isn't an intermediary that checks and assures that the total amount of the funds is certain and cannot be augmented uncontrollably. Nakamoto then, to overcome this problem, forced the system to calculate the balance of every registered account every time a new block is added. Furthermore, the state of the blockchain is adjourned every ten minutes and a copy of it is distributed on every full node. Lastly, this complex of technologies was named Bitcoin<sup>19</sup>. As soon as Nakamoto published the paper, which described its functioning and operational mechanism, it drew wide attention and recognition.

Blockchain Bitcoin experienced a fast and rapid growth since the beginning in the late 2008 clearly for all the innovations introduced in only one structure, but it was particularly fueled by the events and happenings of that particular year. A few weeks before that October 2008 in fact, it was also published the Emergency Economic Stabilization Act, a bill implemented by the US government to prevent the federal

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<sup>19</sup> ANTONOPOULUS M.A., (nt.1).



financial system from collapse<sup>20</sup>. A severe and unprecedented crisis was indeed taking place in the banking sector spreading quickly to many more industries, compromising firstly their national economy, and later straining the global one<sup>21</sup>. One of most significant and representative images of that emergency is the Lehman Brothers' bankruptcy, a moment in history which shed light on the poor judgement and questionable ethical behavior of many institutions<sup>22</sup>. Not surprisingly, the latter created a general sentiment of distrust embedded in the traditional establishments and bodies who originated and contributed to that crisis, a skepticism that didn't fade away easily and quickly<sup>23</sup>. Many people therefore viewed Bitcoin as an alternative instrument, a solution that is able to prevent a plight such as the Great Recession, thus by not confiding anymore on central institutions but rather on the concept of distributed trust. Indeed, the latter becomes a fundamental point, as it is shifted from traditional entities to the blockchain underlying technology<sup>24</sup>. A decentralize and yet shared consensus<sup>25</sup> is reached through transparent protocols and clear mathematical calculations, thus free from human manipulations, errors, and corruption.

Despite the growing popularity and admirable qualities, blockchain did not conquer the approval of everyone, and even many doubted the technology claiming that it has a "bad

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<sup>20</sup> C.CATALINI, J. S. GANS, *Some Simple Economics of the Blockchain*, Rotman School of Management Working Paper No. 2874598, MIT Sloan Research Paper No. 5191-16, April 20<sup>th</sup>, 2019, [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2874598](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2874598).

<sup>21</sup> J. WEINBERG, *The Great Recession and Its Aftermath*, Federal Reserve History, November 22<sup>nd</sup>, 2013, <https://www.federalreservehistory.org/essays/great-recession-and-its-aftermath>.

<sup>22</sup>A. MONTGOMERY, *The Dearth of Ethics and the Death of Lehman Brothers*, 2012, <https://sevenpillarsinstitute.org/case-studies/the-dearth-of-ethics-and-the-death-of-lehman-brothers/>.

<sup>23</sup>PRESS ASSOCIATION, *Financial Crisis, five years on: trust in banking hits new low*, The Guardian, August 9<sup>th</sup> 2012, <https://www.theguardian.com/business/2012/aug/09/financial-crisis-anniversary-trust-in-banks>.

<sup>24</sup> V. MARELLA, B. UPRETI, J. MERIKIVI, V.K. TUUNAINEN, *Understanding the creation of trust in cryptocurrencies: the case of Bitcoin*, <https://link.springer.com/article/10.1007%2Fs12525-019-00392-5>.

<sup>25</sup> L.W. CONG, Z. HE, *Blockchain Disruption and Smart Contracts*, The Review of Financial Studies, May 2019, <https://academic.oup.com/rfs/article/32/5/1754/5427778?login=true>.

reputation”<sup>26</sup>. The main concerns were on the volatility and extreme fluctuations of cryptocurrencies’ value as well as the illegal activities that profited from the anonymity, such as money laundering or ransom requests. Unsurprisingly, the first reaction of national and international authorities was of mistrust, caution and even dismissal, highlighting the many risks but at the same ignoring the market acceptance.<sup>27</sup> Slowly the affirmation and appreciation of the technology increased, drawing attention to the numerous opportunities that it offers.

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<sup>26</sup> S. SHACKELFORD, S. MYERS, *Block-by-Block: Leveraging the Power of Blockchain Technology to Build Trust and Promote Cyber Peace*, Yale Journal of Law and Technology, Kelley School of Business Research Paper No.16-85, November 16<sup>th</sup> 2016, [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2874090](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2874090) .

<sup>27</sup> A. FERREIRA, P. SANDNER, T. DUNSTER, *Cryptocurrencies, DLT and crypto assets – the road to regulatory recognition in Europe*, April 10<sup>th</sup>, 2021, [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3891401](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3891401) .

# **CHAPTER TWO**

## **SMART CONTRACTS**

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- 1. What are smart contracts?**
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- 3. Ethereum**
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### **Introduction**

Chapter 1 described and explained fundamentally what is blockchain, how it works and how it came to existence, while discovering how the whole structure is based on few core concepts. Among these, certainly a crucial one is the decentralization, in a way that the network is conceptualized as an alternative instrument that allows users to not rely on any central institutions as the latter are susceptible of altering information, either by human errors or simply with intent and malice.

As trust is not put any more on traditional establishments but rather on the technology, new tools arise to improve and consolidate this framework. Exactly in this context smart contracts emerge and are widely acclaimed, advancing the pillar notion of automatization.

Chapter 2 will focus on smart contracts, Ethereum and its functioning.

## 1. What are smart contracts?

The concept of smart contract was initially suggested by Nick Szabo in 1994<sup>28</sup> and further developed in 1996, by the same computer scientist, with the publication of an article titled «Smart Contracts: Building Blocks for Digital Markets»<sup>29</sup>. In this paper the author with this paper fundamentally sustained the idea that as technology was expanding and spreading, algorithms will eventually play a determinant role in managing all kinds of contractual dealings. Basically, he proposed a clever and exiting vision, considerably more advance than the existing infrastructural technology available to implement it. That is why it is only with the advent of blockchain in 2008 that smart contracts find a favorable ecosystem, a fertile ground that potentially allowed a proper and full application<sup>30</sup>.

Szabo simply defined a smart contract as an agreement whose execution is automated<sup>31</sup>, highlighting the fact that they are not artificially intelligent or capable of machine learning<sup>32</sup>. Its purpose is in facts to execute predetermined actions in an automatic and self-executing way, hence without the need of a human action or intervention. The objective is clear and evident, and it is to avoid the counterparty risk of insolvency or non-compliance, as the subjects involved may not know each other and there isn't an intermediary among them.

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<sup>28</sup> N. SZABO, *Smart contracts*, 1994, <https://www.fon.hum.uva.nl/rob/Courses/InformationInSpeech/CDROM/Literature/LOTwinterschool2006/szabo.best.vwh.net/smart.contracts.html>.

<sup>29</sup> N. SZABO, *Smart Contracts: Building Blocks for Digital Markets*, 1996, [https://www.fon.hum.uva.nl/rob/Courses/InformationInSpeech/CDROM/Literature/LOTwinterschool2006/szabo.best.vwh.net/smart\\_contracts\\_2.html](https://www.fon.hum.uva.nl/rob/Courses/InformationInSpeech/CDROM/Literature/LOTwinterschool2006/szabo.best.vwh.net/smart_contracts_2.html).

<sup>30</sup> P. CATCHLOVE, (nt.15).

<sup>31</sup> M. RASKIN, *The Law and Legality of Smart Contracts*, 1 GEO. L. TECH. REV. 305 (2017), <https://georgetownlawtechreview.org/wp-content/uploads/2017/05/Raskin-1-GEO.-L.-TECH.-REV.-305-.pdf>.

<sup>32</sup> J. MADIR, *FinTech: Law and Regulation*, Edward Elgar Publishing Limited, 2019.

Smart contracts are structured using a conditional framework, which means that the agreed situations are written using a “if..., then...” logic. Simply put, once certain events happen, such as for example a flight delay or a meteorological phenomenon, it triggers the execution of pre-established consequences, like a payment. These agreements are usually written in programmable language to eliminate the ambiguity or misinterpretation of words<sup>33</sup>. Smart contracts are in fact codified with the so-called Boolean logic, which means that basically computers value the inputs as either true or false, specularly either something happens or it doesn't, and this excludes any kind of interpretation or nuances typical of contractual law. In particular, they are written using a strict syntax, which provides a higher level of certainty. The latter is also guaranteed by the characteristic of being performance focused, i.e. once the smart contract is programmed and effective, the willingness of the parties to execute it is not relevant any more, since if the established condition happens, one or more consequences are triggered. Opportunistic breaches are therefore completely removed, or at least totally minimized, because the performance is completed regardless of any other circumstance or intent other than what is coded in the program<sup>34</sup>. The discriminatory factor in this case is represented on how the smart contract is written by the parties, if the consequences of non-compliance are entirely and effectively integrated in the automatization then the incentive to deviate from the agreed provisions is non-existent. Differently, if the repercussions that derives from the refusal of upholding an end of the bargain are not perfectly connected or not well written, then opportunistic breaches are only minimized. Indeed, a useful option that can be exercised while coding a smart contract is the “kill function”, a clause which basically stops the execution of the smart contract itself.

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<sup>33</sup> A. WRIGHT, P.D. FILIPPI, (nt.6).

<sup>34</sup> P. CATCHLOVE, (nt.15).

## 2. From vending machines to blockchain

The core concept of automatization in smart contracts is not new, Szabo in fact considers the vending machines as its humble ancestor<sup>35</sup>. Truly, observing the object and the functioning the similarities appear: they generally dispense goods or services to a customer in a self-executing way when a certain amount of money is inserted. It is interesting to notice that the seller is not the automated machine itself, but it is instead a third party which is outsourcing the mere execution of the bargain. The vending machines too applies a conditional statement, that is every time a customer puts in a coin, then the seller releases for example a can of soda. A factual situation is presented during the transaction, where the computer inside the machine checks that the triggering event happens and subsequently it applies the contractual rules to the case. If for example, the buyer inserts a penny instead of a euro, i.e. the circumstances are slightly different, then the automated processor would give another output, which is the restitution of the penny without rendering the beverage.<sup>36</sup>

The analogy between smart contracts and vending machines is now evident: they both execute mechanically the provisions when a certain and specific situation verifies, retracing exactly the formula “if ..., then ...” cited in paragraph 2.1.

Although vending machines can be imagined as a relatively recent invention, its origins are on the contrary quite remote. The first reference in history can be found in 215 B.C. with the Greek mathematician Hero, who detailed an Egyptian scheme used to obtain water from a temple by just putting a coin in a precise spot. Particularly curious is too the mechanism created in the 17<sup>th</sup> century in England to automatically dispense tobacco and censored books. Thus, the idea of having a system that mechanically execute calculated actions every time certain conditions presented has deep roots, a concept which evolved and led to the emergence of the smart contracts known today<sup>37</sup>.

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<sup>35</sup> N. SZABO, (nt.29).

<sup>36</sup> M. RASKIN, (nt.31).

<sup>37</sup> M. RASKIN, (nt.31).

Szabo in its papers highlighted few of the potential benefits that an automatization in the execution of contractual clauses could bring, such as for example lower costs of transactions, the avoidance of intermediaries, and the minimization of human actions. Moreover, he further added another element to the potentialities, his intention was in fact to make the breaches to contractual clauses more expensive for the transgressor<sup>38</sup>. Smarts contracts therefore aim to ensure a full performance of the agreement, to carry out the end of the bargain without ambiguities or misconducts.

The emergence and development of blockchain represented a real breakthrough for Szabo and his papers, since the automatization and self-execution secure the contract completion, a fundamental guarantee especially in situations where the parties do not know each other. This notion further inspired the blockchain community to incorporate these mechanisms in the technology: the terms of stipulation and the state of events are written and programmed in immutable decentralized ledgers, and once the smart contract is created and encapsulated in a block, it cannot be further modified or altered. Moreover, the agreement comes into existence and is implemented without the need or intervention of expensive intermediary institutions, the conditions embedded in the contract can be monitored and checked by devices to instantaneously provide the promised action when required. The complexity of the agreement is decided by the parties as a smart contract can exist in isolation or it could be nested in multiple others. A simple example might clarify how the incorporation of smart contracts in the blockchain technology allowed to take a further step in strengthening the reliability and trustworthiness of the new framework. It can be analyzed for instance the case of an automated car lease where there are two counterparties involved called symbolically John and Alex. Suppose that the first subject has a great number of unused automobiles, and he wants to lease one to Alex, who happens to be needing one. They agree that in exchange of the car employment there will be an initial deposit, followed by smaller regular payments with interests. John therefore checks, running a blockchain program, that the debtor has enough funds to pay the agreed amount. The parties then draft and accept the smart contract, which is coded, written, and runned by the nodes in the

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<sup>38</sup> N. SZABO, (nt.29).

chosen blockchain, thus initiating the stated lease. Supposing furthermore that Alex fails to do one or more payments, depending on the provisions adopted in the smart contract the automatic remedies will be implemented, for example the car could be locked and accessible only to the owner, or it could be monitored before finding a safe location where it could be stopped, and it could be simply reactivated once the default has been cured. This straightforward example sheds light on the disruptive potential that smart contracts have when they are directly linked to the parties' money and/or properties. It even eliminates the need to seek legal advice and judicial enforcement in case of breach, as the mechanisms embedded in the agreement already provide a solution for it. Moreover, blockchain, through its cryptographic technology, represents an inexpensive and efficient method to ensure data integrity, lowering the costs of transaction, minimizing the reliance on intermediaries, while guaranteeing a full immediate and irrevocable performance<sup>39</sup>.

### **3. Ethereum**

Chapter one explained the origins of blockchain technology, how it was conceptualized and devised in the late 2008, thus officially launched in 2009 with the name of Bitcoin. The latter is still active and wide popular<sup>40</sup>, representing to this day a cryptocurrency capable of attracting wide interest and global attention.

The following years after the debut of this innovation were marked by the frenetic activities in the crypto sphere, highlighting the advantages and potentialities but ultimately the limitations too. Particularly in 2011 and 2012 multiple digital currencies emerged, each one of them had the intention to improve or refine some critical aspects

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<sup>39</sup>J.M. SKLAROFF, *Smart contracts and the cost of inflexibility*, University of Pennsylvania Law Review, September 18<sup>th</sup>, 2017, [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3008899](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3008899).

<sup>40</sup> The Official Website of CoinMarketCap, highlighting the numbers and volumes around the phenomenon, <https://coinmarketcap.com>.



detected in the Bitcoin' structure<sup>41</sup>. In this spirit, in 2013 a seventeen-year-old programmer, named Vitalik Buterin, made an important contribution with the creation of Mastercoin, which was a new protocol built on the extension of Nakamoto's blockchain along with a rudimental attempt to incorporate smart contracts<sup>42</sup>. His proposal however met resistance in the Bitcoin's community, due to the fact that any changes in the blockchain's protocols must be accepted by the majority of miners as there is no internal central body that guides and gives direction.

Buterin then, as a response, published a whitepaper that basically outlined a completely new blockchain altogether, called Ethereum. The latter differed fundamentally in many aspects from the previous alternatives, firstly because it was a Turing complete scripting language, moreover for the excellent support of smart contracts in the blockchain, and then for having its own cryptocurrency *ether*. Remarkable was too the vision of the young programmer, inspired by the concept of having a medium between applications and transactions, which is why the name of the blockchain was not casual: the word *ether*, or *aether*, is an element that supposedly allows the light to travel permeating the universe.

Moved from the desire to construct a blockchain that could respond better and faster to the changing environment and technological advances, Buterin and other programmers established the Ethereum Foundation, going live with the implementation on July 30<sup>th</sup>, 2015.<sup>43</sup>

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<sup>41</sup> H. HALABURDA, M. SARVARY, G. HAERINGER, *Beyond Bitcoin: The Economics of Digital Currencies and Blockchain Technologies*, [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3894110](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3894110).

<sup>42</sup> A. M. ANTONOPOULOS, G. WOODS, *Mastering Ethereum: Building Smart Contracts and Dapps*, O'Reilly & Associates, 2018.

<sup>43</sup> H. HALABURDA, M. SARVARY, G. HAERINGER, (nt.41).

#### **4. Why Ethereum was different**

One of the biggest and most important innovations in Ethereum's blockchain was, as briefly mentioned in paragraph 2.3, the fact of being a Turing complete scripting language. The expression indeed comes from the homonym English mathematician, widely considered too as the father of computer science, who made many fundamental contributions to the field. One of which happened in 1936 when he constructed a machine that could basically manipulate symbols by reading and writing them on sequential memory, thus providing mathematical evidence and explanations on whether every problem is solvable or not. Specifically, Alan Turing proved that there are uncomputable classes of problems, demonstrating that it is not possible to know priorly if and when a program will eventually stop running, given only an arbitrary program and its input.

Ethereum indeed classifies as being Turing complete, which means that any program of any complexity can be computed, constituting therefore an obvious advantage in flexibility but opening to uncertain scenarios as well. Not being able to simply predict the path of a program, or whether it will terminate, represents a danger in open access systems like public blockchains. A real hazard is exactly the possibility of creating the so-called infinite-loops, namely never-ending programs that without warning can irretrievably disrupt the ordinary activities. Ultimately this peril has been overcome by the design structure and functioning logic by which Ethereum operates, as it will be explained in paragraph 2.5.

Moreover, one of the main ideas behind the new blockchain was to make it general-purpose, in other words to create a technology that could be used for multiple scopes and not centered only around a cryptocurrency, as many others did before. Quickly this vision expanded, indeed the intention was to build a platform that could be used to program decentralized applications (DApps). The latter is basically a web application, created with the aim of being an open, decentralized and peer-to-peer network, but additionally and specially with the incorporation of smart contracts and user interfaces.

Ethereum development culture was as well very different by being more focused on the future rather than the past, and for its ability to rapidly innovate and improve even when it could compromise the compatibility with previous versions. On the contrary, taking for example Bitcoin, the general vision and spirit on the structure development was more oriented to a conservative nature, all the changes are carefully studied to avoid a disruption with the preceding systems.<sup>44</sup>

## **5. Ethereum's functioning**

The introduction of Ethereum represented a discontinuity and a change of pace if compared with the previous blockchains, the excellent integration of smart contracts in the structure and the characteristic of being Turing complete constituted a real breakthrough. The fact of being able to automatically execute any kind of program, however difficult or intricated it may be, in a self-operating way, paved the road to interesting new possibilities.

Novel potentialities meant fresh prospects but also unprecedented obstacles and difficulties, the implications that derived from the embedded innovations implicitly required the creation of methods to resolve or minimize the new risks. Particularly in this case, a concrete danger, already advanced in paragraph 2.4, was the formation of never-ending loops: programs that, due to complex interactions between the code and starting conditions, do not arrive at a conclusion, running therefore indefinitely. For example, if a node attempted to validate such transaction, it would constitute a waste of resources, because computers would be perpetually engaged in the resolution but never finding a finite outcome.

Infinite loops can be voluntarily caused or simply be a bona fide unintended mistake, representing nevertheless a challenge that needed to be addressed. Consequently, Ethereum's programmers studied a mechanism to tackle precisely that problem,

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<sup>44</sup> A. M. ANTONOPOULOS, G. WOODS, (nt.42).

introducing the notion of gas<sup>45</sup>. The latter is basically a measurement unit, used to determine how much computational power is required to complete an operation in the blockchain. Indeed, the underlying assumption is that every calculation has a cost, and not casually gas is easily compared to an automobile's fuel: every road trip entails some expenses just as much as determining a block's hash code or simply as summing two numbers.

To be specific, every transaction in Ethereum has two parameters, which are the gas limit and the gas price (Equation 1). The first one is the maximum quantity of resources that can be consumed for an operation and it has to be decided before starting the execution of the smart contract. The second component, on the other hand, is the number of wei demanded to pay for a unit of gas. Simply said, a wei is the smallest fraction of one ether (ETH), the blockchain's own currency, and the relation is in fact  $1 \text{ ETH} = 10^{18} \text{ wei}$ . To clarify, just like at the fuel's pump, the price of a gas unit is not fixed, indeed it is variable and decided by the transaction requester. The higher is the gas price, the higher will be the chances that the transaction will be executed before the others.

$$\textit{Transaction cost} = \textit{Gas Limit} \times \textit{Gas Price}$$

*Equation 1. Ethereum's transaction costs*

An example might make more comprehensible and less confused Equation 1 and the concepts behind it. Take for instance the case where a user establishes a price of 100 wei for a unit of gas, and the limit of 15 gas to carry out transaction X. The maximum amount that the requester is willing to spend to execute the instructions of the smart contract is consequently 1500 wei ( $15 \times 100$ ). Once made all the computations, it is ascertained that 5 quantities of gas were actually used, therefore billing to the user only 500 wei ( $5 \times 100$ ) while refunding the superfluous unutilized wei. On the contrary if transaction X required more calculation than expected, for example 30 units of gas, than

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<sup>45</sup> A. M. ANTONOPOULOS, G. WOODS, (nt.42).

the computer running it would stop at the limit established at the beginning (15 gas), charging entirely the 1500 wei but not performing the transaction.<sup>46</sup>

As Alan Turing stated and proved, it is impossible to predict the path of a program without actually running it, if and when the smart contract will terminate cannot be known before its real execution. Indeed, the threat of infinite loops is exactly why the notion of gas limit was introduced in the system, to put a maximum cap on the resources that can be consumed, stopping therefore the vicious circle.<sup>47</sup>

This mechanism can be also seen as an incentive for users to code the smart contract in an efficient way, since the requesters pay for the computational power used in the execution, unnecessary frills may result costly and thus will be avoided.<sup>48</sup>

## 6. Oracles

Ethereum's promises were innovative and dense. On one side there was a structured blockchain, guided by the principles of decentralization, immutability of records, a censorship-resistant digital ledger that performed transparently transactions, yet observing the privacy and anonymity of users. On the other side smart contracts were incorporated, offering the possibility to execute in a completely automatic and unambiguous way certain consequences upon the occurrence of precise events. The outcome that derived from the combination of these two pillars was indeed formidable, a system designed to mechanically operate in an independent manner on the grounds of clear and established concepts. Still, an important point needed to be addressed, and it is how this structure was connected with the happenings of real world, indeed in what way the gap between Ethereum and the off-chain sphere was intended to be filled. To answer this exigency, oracles were introduced.

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<sup>46</sup> CHIAP G., RANALLI J., BIANCHI R., (nt.2).

<sup>47</sup> A. M. ANTONOPOULOS, G. WOODS, (nt.42).

<sup>48</sup> H. HALABURDA, M. SARVARY, G. HAERINGER, (nt.41).

The origins of term “oracle” derives from the Greek mythology, the word was used to describe people that could see the future through visions and a constant communication with the gods. Namely, third subject that were believed to provide trusted information, *super partes* agents simply expressing the knowledge imparted from the divinities. With the course of time, another figure can be assimilated to the functions mentioned above, which it is the witness: an external person that narrates certain happening in an unbiased, independent, and unconditional way from the will and desires of the actors in a proceeding.

Symmetrically in the blockchain context, oracles are third parties that gather extrinsic information in an objective manner, hence without any contamination and influence exerted by any subject. Oracles’ characteristics of being neutral and impartial allow the creation of a strengthen trusted sphere, not only far from every possible interference, but rather with the impossibility to tamper the outcomes.

They report only the data about the events occurring in the world which are needed to monitor or trigger smart contracts. Take for instance the score of a football match, the flight delay on a certain route, the exchange rate between two currencies, or the rainfall precipitation in a certain location can all be examples of information delivered by oracles in the system. They basically represent the bridge between blockchain and smart contracts with the concrete happenings in the world. <sup>49</sup>

## **7. Towards a legal recognition of smart contracts and blockchain**

The emergence of blockchain technology and its evolution were a phenomenon noticed by many the lawmakers, who reacted in different ways, but surely giving it a great deal of attention. Due to its recent and rapid development, it is still uncertain the regulatory framework in which such technologies will be defined and constrained, a process yet to be finalized that started and saw its origins just a few years ago with the recognition of the digital sphere.

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<sup>49</sup> A. M. ANTONOPOULOS, G. WOODS, (nt.42).

Italy was considered a pioneer in this aspect, as it was the one of the first countries in the world to acknowledge the legal validity and importance of informatic documents, and their equivalence with the analogic ones. This comparability officially occurred with the so called Bassanini Law, in the art. 15(2) of the decree n.59 of March 15<sup>th</sup>, 1997<sup>50</sup>.

Another significant step was made with the CAD decree, introduced in 2005 and modified multiple times, establishing in art.20 (1bis)<sup>51</sup> an important provision, which is that every time a digital signature is apposed in an electronic document, it has juridical effects, and it is equivalent to a private contract. Particularly, the document satisfies the requisite of the written form, constituting furthermore its effectiveness as legal evidence.

Also the European Union intervened on this regard with the regulation No.910/2014, confirming the legal validity of electronic signatures (art.25), of digital seals (art.35), and in art. 46 established the impossibility to refuse the admissibility in litigations of an electronic document solely on the ground of its material form. Additionally, art. 25(3) provides the principle of mutual recognition, which means that a qualified electronic signature in a Member State will be recognized as such in all the others Member States as well.<sup>52</sup>

The implications that derived from the above provisions opened the possibility for an official legal recognition of blockchain based transactions, since as they are considered, by all means, lawful documents, they have juridical effects and can constitute proof in a proceeding. Not only, smart contracts, if provided with a digital signature, are perfectly

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<sup>50</sup> Legge 15 marzo 1997 n.59, “Delega al Governo per il conferimento di funzioni e compiti alle regioni ed enti locali, per la riforma della Pubblica Amministrazione e per la semplificazione amministrativa”, Parlamento Italiano, <https://web.camera.it/parlam/leggi/97059l.htm> .

<sup>51</sup>Codice per l’Amministrazione Digitale (CAD), D.Lgs. 7 marzo 2005, n.82, <https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:decreto.legislativo:2005-03-07;82> .

<sup>52</sup>REGULATION (EU) No 910/2014 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 July 2014 on electronic identification and trust services for electronic transactions in the internal market and repealing Directive 1999/93/EC, <https://eur-lex.europa.eu/legal-content/IT/TXT/?uri=celex%3A32014R0910> .

equivalent to a private contract, hence with all the consequences in terms of applicability of the subject.<sup>53</sup>

Moreover, the Italian legislator explicitly defined the concepts of blockchain and smart contracts only in 2019 in the so-called Simplification Decree, at the art. 8-ter<sup>54</sup>. The law specifically highlighted the digital ledgers' characteristics of immutability and inalterability of records, and the importance of the time stamping validation citing the juridical consequences of the EU Regulation 910/2014.<sup>55</sup>

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<sup>53</sup> F. SARZANA, M. NICOTRA, (nt.18).

<sup>54</sup> LEGGE 11 febbraio 2019, n. 12, Conversione in legge, con modificazioni, del decreto-legge 14 dicembre 2018, n. 135, recante disposizioni urgenti in materia di sostegno e semplificazione per le imprese e per la pubblica amministrazione, Gazzetta Ufficiale, <https://www.gazzettaufficiale.it/eli/gu/2019/02/12/36/sg/pdf>.

<sup>55</sup> Particularly, the Italian law at art. 8-ter (nt.54) states:

«1. Si definiscono “tecnologie basate su registri distribuiti” le tecnologie e i protocolli informatici che usano un registro condiviso, distribuito, replicabile, accessibile simultaneamente, architetture decentralizzate su basi crittografiche, tali da consentire la registrazione, la convalida, l'aggiornamento e l'archiviazione di dati sia in chiaro che ulteriormente protetti da crittografia verificabili da ciascun partecipante, non alterabili e non modificabili.

2. Si definisce “*smart contract*” un programma per elaboratore che opera su tecnologie basate su registri distribuiti e la cui esecuzione vincola automaticamente due o più parti sulla base di effetti predefiniti dalle stesse. Gli *smart contract* soddisfano il requisito della forma scritta previa identificazione informatica delle parti interessate, attraverso un processo avente i requisiti fissati dall'Agenzia per l'Italia digitale con linee guida da adottare entro novanta giorni dalla data di entrata in vigore della legge di conversione del presente decreto.

3. La memorizzazione di un documento informatico attraverso l'uso di tecnologie basate su registri distribuiti produce gli effetti giuridici della validazione temporale elettronica di cui all'articolo 41 del regolamento (UE) n. 910/2014 del Parlamento europeo e del Consiglio, del 23 luglio 2014.

4. Entro novanta giorni dalla data di entrata in vigore della legge di conversione del presente decreto, l'Agenzia per l'Italia digitale individua gli standard tecnici che le tecnologie basate su registri distribuiti debbono possedere ai fini della produzione degli effetti di cui al comma 3».



# **CHAPTER THREE**

## **AUTHOR'S RIGHTS**

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## **Introduction**

In a continuous evolving economy towards an even more dematerialized market, author's rights play a fundamental and increasingly important role seeking the legal and economical protection for creators and their work.

Collocated in the wider discipline of intellectual property rights, the author's rights define and delineate the sphere of entitlements and guarantees that any production of the human mind have.

This framework greatly changed in the last decades in the light not only of new technological advancement and innovations, but also to promote a minimum standard of protection across the world.

Chapter 3 will focus on author's rights system looking particularly at the Italian legislation.

### **1. The ratio and necessity**

One of the challenges that the legislator faces constantly and on a multitude of aspects is to balance different interests and scopes, in most cases even contrasting and opposing ones, thus elaborating and consequently bringing to the attention of society new laws and norms. Indeed, the aim is to satisfy through them many needs and wants, to find a solution and equilibrium, while always keeping safe and at heart constitutional principles. Particularly, in the case of the author's rights, the legislation implemented seeks to fulfill the benefits of mainly two subjects: the creators and the public intended as the collective community that serves also as potential customers.

On one side there are the author's needs and will, which are for instance getting recognized for their work, the liberty to choose the destiny of it, getting a fair compensation, deciding if when and where disclose it, to eventually being able to control it afterwards, preventing anyone else from coping and profiting from it.

On the other side, on the contrary, there is the society which thrives from the enrichment of the free flowing of new ideas, information, and knowledge, it prospers from artistic creations, attracting and stimulating investments, encouraging the learning and the developing of a cultural heritage, therefore implicitly seeing any limitation in the diffusion of such works almost as deterrent for progress.

The requirement for a regulation is hence to conciliate these conflicting interests, a need that results relatively as a novelty, if compared to others disciplines such as the private property one or extra-contractual liability one. As a matter of facts, the first mention in history related to the establishment of a norm with the intent to protect the creators and their intellectual work happened in England in 1709 with the Statue of Anne. In particular, it provided for authors the exclusive right to publish their own writings and compositions for a period of time of fourteen years eventually renewable, calling it “the right to copy” from which it then originates the common law denomination of copyright. The need for a legislative framework is hence originated in the XVIII century, where middlemen and cultural intermediaries, such as publishers, were uncontrollably printing and distributing the intellectual work of many artists, scientists, and writers without even their consent, and causing them therefore a recognized state of detriment and ruin. Indeed, it is in this period that creators realized the necessity of resorting to the market as a source of income and therefore living, as the social paradigm happened for centuries before was not applicable anymore: there was no longer a Maecenas offering them shelter and economical support. Financial reasons were then one of the main underlying causes that originated the insurgence of such need and consequently its recognition by the legislator. But not only, the exigency was indeed aggravated by diffusion of the printing press with movable type, invented by Johann Gutenberg in the XV century, and that hundreds of years later was seeing the production of literary works almost at an industrial scale. The latter consolidated the foundations for the protection of such writings against all acts of unauthorized reproduction put in place by third parties.<sup>56</sup>

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<sup>56</sup> G. SPEDICATO, *Principi di diritto d'autore*, Bologna, il Mulino, 2020.

Understanding and analyzing the past can always give an important reading key of the present, and possibly even of the future. In this case, it is relevant to determine when the lawmaker intervened to protect the economic interests of creators and their intellectual work, and it is the emergence of an innovative technology that profoundly altered the way by which information was transmitted and reproduced. Taking a look throughout the centuries, this will be a constant in the history of the author's rights.<sup>57</sup>

## 2. Form and requisites

The scope of protection of the author's rights is any production of the human mind, namely the result of an intellectual activity such as literary works, architectural, dramatic, theatrical, choreographic, musical compositions, films, photographs, computer programs, databases.<sup>58</sup>

The applicable law in Italy however imposes some characteristics that a work must possess to benefit of such protection, specifically in relation to its form and the requisites of originality and creativity.

The Italian legal framework of the author's rights is encapsulated in the law of April 22<sup>nd</sup>, 1941, n. 633 and along with artt. 2575-2583 of the national civil code of 1942. This paragraph and chapter 3 will also take as a reference the many international agreements ratified such as the Berne Convention (1886, last reviewed in 1971), the WIPO Copyright Treaty (1996), the Universal Copyright Convention (1952) and the TRIPS Agreements (1994), as well as the numerous European Union directives.

One of the most important principles established relates to the fact that, for a work to be protected, it must have an external manifestation, a concrete form as the mere abstract thought cannot suffice. It is the case for example of a painter with the desire to depict a maritime landscape: before its execution, the mere concept, however genius

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<sup>57</sup> S. DELL'ARTE, *Fondamenti di diritto d'autore nell'era digitale*, Key Editore, 2017.

<sup>58</sup> EUIPO, 15 questions from consumers on copyright for all EU Member States, <https://euipo.europa.eu/ohimportal/en/web/observatory/faqs-on-copyright-it>.

may be, cannot be eligible for protection; only after the realization the artistic work can be recognized as such.

The latter introduces another important corollary, known as the *idea/expression dichotomy*, according to which ideas do not fall into the scope of copyright protection, but only the original expression of the author does. This is stated clearly in art.2 of the WIPO Copyright Treaty (WTC), affirming the principle of non-appropriability of «ideas, procedures, methods of operations, or mathematical concepts»<sup>59</sup>. This provision indeed allows anyone to create in an independent manner an intellectual work, whose content or idea have already been disclosed, but expressed in another form, hence all without a prior approval and consent of the preceding author. Take for example how many plots about teenagers in a school of magic have been written, the stories among vampires and other mythical creatures, or all the poems and songs about a heartbreak, narratives that at the base can share the same idea but have been declined in numerous and infinite forms. It is only after the author has manifested his or her personality through their own artistic mark, expressed in a distinctive and particular way, that the specific work can be protected.<sup>60</sup> The aim intended by the lawmakers for such provision is to encourage and promote a cultural pluralism which is of fundamental importance for the vitality of democratic institutions and society.<sup>61</sup>

Furthermore, regarding the form of expression, art. 2575 of the Italian civil code (c.c.) and, chiefly, art. 1 of the law on the author's right protection (hereinafter l.a.)<sup>62</sup> states that an intellectual work is protected whatever the external form or method may be. It means that for example an original symphony played by its composer is a production of the human mind, protected by the law even if it isn't recorded on any support or noted on any musical sheet: what is sufficient and relevant only is the author manifestation of

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<sup>59</sup>WIPO Copyright Treaty (WTC), Geneva, 1996 <https://wipolex.wipo.int/en/text/295157> .

<sup>60</sup> B. CUNEGATTI, *Manuale del diritto d'autore, Principi e Applicazioni*, Milano, Editrice Bibliografica, 2020.

<sup>61</sup> G. SPEDICATO, (nt.56).

<sup>62</sup>SIAE, Legge sul Diritto d'Autore, [https://www.siae.it/sites/default/files/BG\\_Normativa\\_LeggeDirittoAutore.pdf](https://www.siae.it/sites/default/files/BG_Normativa_LeggeDirittoAutore.pdf)

such work, for instance in an improvisation at a concert. Indeed, this principle relies on the fundamental nature of the intellectual work and its implications: the ultimate result obtained by an author is the consequence of a process and an effort made at an intellectual level. Practically speaking, these creations of the human mind are collocated in the legal system as intangible assets, namely properties that lack of a corporeality. They can be enjoyed and experienced only in a mediated form through the so-called supports, which are basically material objects that incorporate the intellectual work without conceptually overlapping it. The distinction between a material and immaterial entity can result clearer with an example, take for instance the case of two copies of the same novel: undoubtedly the physical objects are two (the books), but the work incorporated in them is one (the novel). Similarly, if both volumes get destroyed, it doesn't mean that the intangible asset, in them incorporated, is lost too, as there could be other copies. Even in the hypothesis that the two books destroyed were the last ones, the work can be recreated with a mnemonic effort by the author on a new and different support.

In the case where the intellectual work circulates in a digital format, the presence of a support is less evident, but still real and existing, as it could be for example a file that codifies a musical melody. It could be wrongfully believed that the support is absent or just merely transitory, as a file can be easily transferred from a support to another; however, the digital format, in an ultimate analysis, is a sequence of electrical states, a tangibility which may not be recognized in a strict sense, but it still has a real and physical nature. As a matter of facts, the same reasoning can be applied for example to an experience of live music, as the sound waves, detected by anyone in the proximity, represent the vehicle and support by which the song is enjoyed. In this case too, such waves can superficially be judged with an absence of a material palpability, but they surely have a physical nature.

Indeed, through the many examples it is now evident how an intellectual work, namely a type of intangible assets, needs and requires an external entity conceptually separated from it to circulate and be appreciated. The dichotomy between the productions of the mind and the relative support is traditionally identified with the expressions of *corpus*

*mysticum* and *corpus mechanicum*, underlining the fact that they are two separate entities, *corpora*, autonomous and independent on the notional level and hence reflected on the juridical level too. The rights and obligations that derive from the titularity of the one or the other are very much different, allowing or denying liberties and protection which will be explored in the following paragraphs.<sup>63</sup>

As initially stated at the beginning of this section, the fundamental requisites demanded to define an intellectual work as such by the law relates to its form and expression, citing in particular the characteristics of creativity and originality. Following the principles and notions previously explained, these aspects are not to be looked for in the content, which is not under the scope of protection, but rather only in the external manifestation of it.

Indeed, the object of an intellectual work could be even a series of information already present in the public domain, but if elaborated in a unique manner, thus making evident a distinct personal mark of the author, it can constitute a protected work. A minimum component of creativity and originality in the exposition form is hence required.<sup>64</sup>

### **3. The creation of an intellectual work and its implications**

In the different types of intellectual properties, it is often required by the legislator an administrative procedure with a positive outcome to recognize the creation of the work and to verify the existence of the prerequisites and conditions imposed by the law, as it happens for example with patents and registered trademarks or designs. On the contrary, in the copyright regulation such activity is not required, as the creation of a work constitutes itself a necessary and sufficient circumstance for its legal protection. Indeed, art. 6 l.a. states that no action or procedure is needed to be performed by the author to acquire such rights related to his/her/their own production of the mind.

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<sup>63</sup> G. SPEDICATO, (nt.56).

<sup>64</sup> B. CUNEGATTI, (nt 60).

The latter principle is also affirmed at the international level particularly in the Berne Convention at the art. 5(2), which distinctly declares that no formality is mandatory for the enjoyment and exercise of the entitlements<sup>65</sup>. The absence of constitutive policies has to be traced back to the historical context and chain of events that happened in the past, a precise choice of the lawmakers which corresponds to the will of avoiding a possible form of censure or control on the intellectual works.<sup>66</sup>

Italian regulation, however, at the article 103 l.a., provides for some forms of registration by instituting a public general registry for protected works and one for software, stressing nevertheless later in the same norm that the relevant annotation doesn't have a constitutive character. The registration isn't mandatory and serves only for the evidence, as long as such registration can be helpful to solve disputes over ownership or creation (namely, the ownership is assumed as it is written on the record, unless it is proven otherwise). Indeed, the aim is to alleviate the author if controversies arise, shifting the burden of proof on the other party and at the same time claiming eventual priority on the existence of the work and on the identity of the creator.

Besides the Italian legislative framework just explored, common law countries have been characterized by different traditions. It was clearly evident in the US system, which until the Berne Convention Implementation Act of 1988 was imposing registration formalities and the so-called copyright notice. The latter, expressed with the symbol ©, needed to be juxtaposed at the work, citing afterwards the year of first publication and the subject holding its rights.

International conventions have then agreed and established that the moment when an intellectual work is created is automatically and officially protected by the law.

Following the principles of civil law systems, the author's right is acquired directly, as a consequence of the mere intellectual act, and instantaneously, from the exact instant in which the author externalizes the creation.

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<sup>65</sup> World Intellectual Property Organization (WIPO), *Berne Convention for the protection of Literary and Artistic Works*, version last amended on September 28<sup>th</sup>, 1979, <https://wipolex.wipo.int/en/text/283698>.

<sup>66</sup> G. SPEDICATO, (nt.56).



Additionally, art.6 l.a. and followings introduce the existence of two categories in the Italian author's right system concerning how the acquisition of the right has happened, if at an ordinary title or derivative. The first one attributes all the rights immediately and directly to the author as the work comes into existence, while if the acquisition of such rights happened for effect of a further transfer or a disposal is said to be given at a derivative title. Indeed, art.6 l.a. provides that the original title of an acquisition of copyright consist in the creation of a work.

However, in relation to this general rule there is a special case, highlighted in the art.12-*bis* of l.a. The latter provision states that, particularly in the cases of computer programs and databases, the economic rights are attributed automatically to the employer, in hypothesis that the employee's creation has happened while executing the job's tasks or instructions given. This directness could seem like an exception from the general provision, but it isn't: the employer acquires only at derivative title, confirming and upholding therefore the previous principle. Analyzing deeper the aforementioned article, it is evident the aim of such rule made by the Italian lawmaker, that is to obtain the same result of others legislative systems through a mediated form. Emblematic is once again the example of the US juridical provisions, which allows the so-called *works for hire* contracts, an institute that implies the recognition by default of the quality of author directly to the employer<sup>67</sup>. Similar rules are established for UK and Australian legal systems, while the European Union seems to accept both hypotheses, remitting this decision to the single national lawmakers<sup>68 69</sup>.

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<sup>67</sup> Copyright Act, § 201 (b), page 166, <https://www.copyright.gov/title17/title17.pdf> .

<sup>68</sup> Directive 2009/24/CE of the European Parliament and of the Council of 23 April 2009 on the legal protection of computer programs, art.2(1), <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009L0024> .

<sup>69</sup> G. SPEDICATO, (nt.56).

#### **4. Collective works, co-authorships, and derivative works**

For simplicity, in the preceding paragraphs it was taken in consideration mostly the case where the creator of an intellectual work was only one person. However, this particular situation is not the exclusive one, and for specific types of works not even the most frequent. Indeed, many people can contribute to the realization of an intellectual work can contribute many people, whose number can be even elevated. Still, the law does not recognize to everyone involved with the same rights and entitlements, and for this purpose it separates and differentiate distinct circumstances. The general principle established relies on the consideration of co-author anyone that apports a significant contribution onto the work, the relevance must be accounted indeed in terms of creativity.

More specifically, at the art.3 l.a. the Italian lawmaker identifies the first case of collaborative authorship with the so-called collective works. This particular label qualifies those intellectual works that are the result of a composition of single works, or parts of them, and that additionally have the character of an autonomous creation, as the outcome is the consequence of a process of choices and a coordination made to reach a precise communication and expressive intent. Illustrative and non-exhaustive examples can be dictionaries, encyclopedias, newspapers, and magazines. Thus, the essential elements are the selection and arrangement of the different intellectual works, which always remain perfectly distinguishable among each other, and the additional value that comes from the aggregation of these specific creations in that determined way or that particular order. Furthermore art.7 l.a. assigns the ownership of a collective work to whom organize and direct the creation of the work itself, namely who picks and sorts out the pieces and decides how to organize them. Usually, in literary collective works the author is also called editor, or in the circumstances of newspapers and magazines is called director.

Who select and arranges the intellectual creations is, therefore, considered the author in the collective works, but the economic exploitation rights are attributed to another subject, namely the editor, unless agreed otherwise. The latter concept is established at

the art 38 l.a., and it has clearly a financial foundation following the legal principle that wants to reward who actually takes the risks. In this case, it is the editor of a collective work who materially sustains the publication costs and the chances of non-success and for this reason the legislator automatically recognizes to this subject the economical results.

In the collective works, as cited before, it is always possible to conceptually and substantially distinguish the singular works that taken together compose the whole creation, they don't fuse with each other, and they can be even enjoyed individually. Indeed, the independent and autonomous singular fruition is always allowed, and, in most cases, it is even the normal method of usage, as for example dictionaries and encyclopedias. The autonomy and independence of the single creations is also reflected by the ownership of the relative and exclusive rights, that are always attributed to singular author for his/her own part. Consequently, it derives the configuration of two sides: on one hand there is the editor, who has the economic exploitation rights of the collective work, while on the other hand, there are the authors of the individual works, who maintain their right of disposal on their own work, according obviously with other agreements eventually reached. This distinction between the authorship of the collective work and the authorship of the individual intellectual creation is recognized by almost every juridical system, even if there isn't an international provision that transposes this concept.

A second type of authorship taken in consideration by the lawmakers is the co-authorship, cited and explained in art.10 l.a. Basically, an intellectual work co-authored when the individual contribution made by multiple subjects cannot be separated and distinguishable, creating therefore an indivisible work. It is the case for example of musical compositions at four hands, scientific papers written by many scholars, or open-source software, all those creations that necessitates the contribution of more than one person and that result in an inseparable and indissoluble body. Interestingly, even when it is possible to abstractly recognized the individual part apportioned by each creator, i.e. who made what exactly, the legislator still considers the work as an indivisible one. The reason behind the latter decision lies in a having wide perspective and a broader view

of the state of things, as the lawmaker thinks that the individual contribution makes sense if and only if it is taken in the context of the co-authorship work as a whole. The same art.10 l.a. provides that in the case of co-authorship, the ownership of the work is shared among all participants in equal parts, if not agreed otherwise. The intellectual creation is therefore taken as a unitary body, and quotas belonging to each author are usually expressed in percentage. Special attention is also dedicated by the legislator on the modalities of protection and enforcement of the moral rights, stating that every author in this regard is individually entitled to defend the work against infringing acts made by third parties, subordinating instead the prior consent of all the other authors in cases of extraordinary administrative events, as an inedited publishment or the utilization of a modified version.

Another particularly peculiar type of authorship is represented by the derivative works, which are creations realized starting from another prior work, thus taking up formal elements susceptible of protection. Indeed, § 101 of the US Copyright Act defines them as «based upon one or more preexisting works»<sup>70</sup>, including therefore all the creations that comes from elaborations, transformations, modifications, and/or adaptations. Derivative works share with the previous cases the circumstance of being a product attributed to different authors, however it doesn't exist an underlying common creative project of collaboration among them. It is instead configured as a stratification of the different works, a merger of them, as a consequence of the multitude of participations and contributions made by many subjects.<sup>71</sup>

The importance of the derivative works is also recognized by art.4 l.a. in the Italian legislation, which establishes the protection of such works, citing for instance the translations in other languages, the transformations from a literary form to other artistic ones, the additions or modifications that constitute a substantial remake of the original creation, summaries and compendiums, the reductions, and lastly any variation that doesn't compose the original work. Furthermore, art. 7(2) l.a. specifies that in the case of derivative works, the ownership of the exclusive rights is attributed to the authors in

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<sup>70</sup> Copyright Act, (nt.67).

<sup>71</sup> G. SPEDICATO, (nt.56).

relation to the limits of their works. Taking for example a translation of an English text into an Italian one, the adaptation by all means constitutes a creative act, and therefore it is recognized a protection. However, the lawmaker also acknowledges the causal connection between the two creations, as long as the later contribution could not have happened if the original work didn't exist. To further enforce this concept the legislator provides for the possibility that the author of the original work allow or deny the economic exploitation of an elaborated version of it, granting therefore a full protection of the work without any prejudice for the rights already existing on the creation.<sup>72</sup>

## 5. Economic exploitation rights

Generally, the Italian legal framework, in relation to the author's rights protection, recognized certain rights to the author, as it was seen and mentioned in the previous paragraphs. In particular, our juridical framework is structured with a duality nature, which separates the prerogatives of a moral nature to the economic ones, two distinct and autonomous parts. Indeed, there are other systems, such as the monistic one, that on the contrary sees the whole subject as a unitary structure.

This paragraph will analyze the economic rights, contemplated by art.13-18bis l.a., explaining what are the instruments that the legislator grants to the authors to commercially exploit the work, therefore allowing them to gain an economic advantage from it and to avoid any interference made by third parties while enjoying such entitlements.

Art. 12 l.a. is the premise to the subject, the Italian lawmaker in facts introduces the protection of such rights on a double level. Firstly, it provides a general clause stating that it is a prerogative only of the author to dispose of all those economic rights related to their intellectual work, and secondly, it describes the most representative cases. This distinction will reveal itself as very important, as the technological advancements and markets' structure continuously change, establishing new ways to financially exploit the

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<sup>72</sup> V. FALCE, *La modernizzazione del diritto d'autore*, Giappichelli Editore, Torino, 2012.

creations. Indeed, other juridical frameworks, such as the British and American ones, provide only an exhaustive list of cases and for this reason they could be considered as relatively more rigid on this matter, with the consequence of having more difficulties to include in the sphere of protection those situations not expressly cited.

### **5.1 The right of reproduction and transcription**

The first form of exercise of the exclusive economic rights is collocated in art.12 (3) l.a. and it is considered to be the act of first publication of the intellectual work by making it available, or potentially available, to the public. It is indeed a faculty of the author to decide if and when eventually disclose it, and to oppose to any intrusion made by third parties in this regard. Such right is also considered the positive reflection on the patrimonial level of the moral right of inedited, namely two sides of the same coin, and for this reason will be explored deeper in the next paragraph.

Historically the right that constitutes the central and essential core of the wider array of the economic rights is the reproduction one, which is described in art. 13 l.a. and considered by many even the right for antonomasia. It is generally defined as the act of making copies without an authorization of the author or without being allowed by the law, and it is irrelevant for the legislator the method or form by which unlawful reproductions occurs, namely if it happens for the entirety of the work or for just the autonomous creative parts of them. The notion of work reproduction greatly changed in the last decades, starting from the expensive and imperfect forms of copy creations in the 1800s, to the ones of the modern and contemporary age. The latest technologies introduced, nowadays in use, enables an easy, immediate, and cheap method of making perfectly identical copies, which escape from the traditional material control previously present on the physical supports. The proliferation of digital copies and the InfoSoc EU directive<sup>73</sup> pushed the Italian legislature to modify art. 13 l.a., specifying the inclusion

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<sup>73</sup>*DIRECTIVE 2001/29/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 22 May 2001 on the harmonization of certain aspects of copyright and related rights in the information*

not only of making permanent duplicates, but also temporary ones. The extent of the latter provision was enormous, considering the fact that every time anyone browses the web and enjoys any intellectual creation is implicitly making a replica on their own digital device, taking also into account the explicit situations such as downloading, sending files through emails, the sharing on social media just to name a few. To avoid a paralysis, hence, the legislator excluded from the provision all those circumstances that don't have an economic significance and that are temporary, and integral to the technological process with the purpose of transmission or lawful use.<sup>74</sup>

Following, art 14 l.a. introduces and recognized to the author the exclusive right of transcription, which basically consists of transforming the intellectual creation in another form, for example from an oral to a written one. It could be for instance the registration of a lecture or of a musical concert, that if not authorized by the right's holder could be considered illegal, particularly if they have an economic character as cited before.

## 5.2 The right of communication

The right of execution, representation or acting in public is also called the right of communication to a present audience and is attributed by the law at the art. 15 l.a. exclusively to the author. The realization of one of those acts, independently of the technological tools or the modalities chosen, has to happen with a public present at the moment and place in which the representation occurs. Exceptions to this provision can be the representation with an important social relevance, made to culturally promote and value the intellectual works, but always without lucrative intents. The examples

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society, art. 2 - Reproduction right, <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32001L0029&from=IT> .

<sup>74</sup> *DIRECTIVE 2001/29/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 22 May 2001 on the harmonization of certain aspects of copyright and related rights in the information society*, (nt.73), art.5 - Exceptions and limitations.

cited in subparagraphs 2 and 3 of art. 15 involve the representation in museums, archives, libraries, but also schools, hospitalization institutions, and close family.

Art.16 l.a. identifies instead another hypothesis of exploitation for the creations of the mind, constituted by the so-called communication to a distant public. The notion of audience is therefore the element of difference compared to art.15 l.a., as in this case the representation happens to spectators that are not physically present in the place where the divulgence occurs. The norm further provides a non-exhaustive list of examples, citing televisions, telephones, radios, and analogous methods.

On the matter of the communication rights, the European case-law, as well as the Italian one too, are rather articulated and complex, characterized by decisions made on a wide scale of criteria of different natures and importance.<sup>75</sup>

Besides that, it is widely shared at an international level the difference between an act of communication with an act of making available to the public an intellectual work, particularly with the art.8 WCT<sup>76</sup> and art.3 of the EU directive 2001/29/CE<sup>77</sup>. The two circumstances indeed present some analogies, mainly the suitability of reaching a distant and wide audience, but they are structurally very dissimilar. The communication to the public implies a transmission, or a re-transmission, of the work, but in the case of making it available it is needed only the upload in Internet, leaving to the users the choice of downloading or streaming if desired. Making available to the public comprehend any act performed by any subject that can give directly, or through a mediated form, the possibility to access a protected creation, and for this reason it is considered as an access right.

Moreover, recent decisions of the European Court of Justice have assimilated the practice of the hyperlinking, or just simply linking, as an act of making it available to the public, hence connecting all the implications that derives from the case. Specifically, it confirms that it is tendentially lawful when the link gives direct access to a content which

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<sup>75</sup> G. SPEDICATO, (nt.56).

<sup>76</sup> WIPO Copyright Treaty (WTC), (nt.59).

<sup>77</sup> DIRECTIVE 2001/29/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 22 May 2001 on the harmonization of certain aspects of copyright and related rights in the information society, (nt.73).



was already at disposal of the users and disclosed with the authorization of the author or indeed by the latter subject.

### **5.3 The right of distribution and related rights**

Art 17 l.a. introduces the right of distribution, namely the exclusive prerogative of the author to control the distribution of the intellectual work, comprehending the actions of putting on the market and the successive circulation of the original creation as well as the copies, through the sale or any other transfer of ownership. This provision however encounters a limit, the distribution right is said to be exhausted when, in relation to the copies, the property of the object was lawfully acquired by others. The implication of such restriction is the impossibility for the titular of the author's right to control the subsequent circulation when the intellectual work was introduced to the market with the consent of the creator or directly by the same one.

Additionally, art.18 l.a. attributes to the author the exclusive right of translation, elaboration, and modification of the work, all acts that have in common among with each other the fact of representing a form of manipulation or transformation of the creation itself.

Lastly, the right of rental and borrowing is recognized by art.18-*bis* l.a. to the author, particularly such entitlements are meant without a transfer of ownership and for a limited period of time, after which the material object will return into the possession of the subject that firstly lent it.<sup>78</sup>

### **5.4 The independence of the economic rights and their protection**

Art. 19(1) l.a. establishes the independence of the exclusive economic exploitation rights and the modalities by which they can be exercised and protected. The introduction of

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<sup>78</sup> A.S. GAUDENZI, *Il nuovo diritto d'autore*, IX edizione, Maggioli editore, 2016.

the latter provision allows authors to transfer the ownership of such rights without compromising the enjoyment of the ones not conveyed, unless they are not strictly dependent on them.

Mostly every legal framework have set a limited duration in time for the economic rights, after which the intellectual work falls into public domain and consequently can be freely used by anyone. International agreements, particularly at art. 7 CUB<sup>79</sup> and art. 12 TRIPS<sup>80</sup>, established a minimum term of protection of fifty years after the author's death. The European directive 2006/116/EC<sup>81</sup> however extends this period of time to seventy years *post mortis auctoris (p.m.a.)*, starting from January 1<sup>st</sup> of the successive year after the passing of the creator. This general rule can be easily applied when there is only one author and his/her identity is known, while in the cases of co- authorship the term runs from the death of the last surviving author. In a situation of anonymous work, on the contrary, the protection is effective until the fiftieth year after the first publication of the intellectual work.<sup>82</sup>

## 6. Moral rights

The Italian law assigns not only patrimonial rights to the author, cited in the previous paragraph, but also prerogatives that is said to have a moral character, as they aim to protect the subject, in the quality of author, and the own proper relation with the intellectual work. They are considered generally as personal entitlement, which can be enjoyed and exercised only by the creator and therefore cannot be the object of a transfer of ownership.

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<sup>79</sup> *Berne Convention for the protection of Literary and Artistic Works*, (nt.65).

<sup>80</sup> World Trade Organization, TRIPS Agreement, [https://www.wto.org/english/docs\\_e/legal\\_e/27-trips\\_04\\_e.htm](https://www.wto.org/english/docs_e/legal_e/27-trips_04_e.htm).

<sup>81</sup> DIRECTIVE 2006/116/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 12 December 2006 on the term of protection of copyright and certain related rights, <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:372:0012:0018:EN:PDF>.

<sup>82</sup> G. SPEDICATO, (nt.56).

This vision and consideration in relation to moral rights is typical of the legal systems of the continental Europe, which recognize to the author a central role and in need of protection. Opposed to the latter perspective there are common law countries, where the attention is shifted from the person to the economic interest, and lucrative aspects assume a greater importance. The dichotomy between the two approaches is also reflected in the international agreements, particularly the Berne Convention is closer to the European tradition while the WIPO Copyright Treaty to the Anglo-Saxon one.

Moral rights in Italy are widely recognized and protected, establishing furthermore an explicit independence from the economic ones at the art.20 l.a., indeed the author can transfer even all the patrimonial entitlements without having any repercussion on the titulary of the personal ones. Particularly, the law considers moral rights as rights that cannot be waived, even if he/she wants to; inalienable, because the creator cannot lawfully transfer them; and imprescriptible, since it is always possible to take legal action to protect them, without any limit in time hence even after the author's death, as provided by art. 23 l.a. On the last matter, it is important to notice that the heirs do not acquire the personal rights *iure hereditatis*, the convey is not possible even *mortis causa*. Some relatives, after the passing of the creator, can only therefore take legal action to protect the honor, the reputation and more in general the image of the dead relative.

### **6.1 The right of inedited**

The first instrument, in logical and chronological terms, that the legislature grants to protect personal rights is the protection of inedited works, i.e. the choice of the author to publish or not the intellectual creation. Once the latter is put in circulation it will be inevitably associated to that particular person (or people), with all the implications that derive from this fact and that is why the legislator assign this faculty only to the author, while excluding any possibility of divulgation by third parties without the creator's will. This protection hence will be available until the publishment of the work, after which the repented author can only withdraw from the market at certain conditions expressed in artt.142-143 l.a., a rule established for instance in France too. Furthermore, the right

to make public an intellectual work can be exercised by the heirs, after the author's death, if and only if the deceased did not forbid it while still alive, hence recognizing to the desires and will of creator a prevalence on the economic interest of the successors.

## **6.2 The right of paternity**

The right of paternity is normally considered one of the main ones, if not the one for excellence, among all moral rights, and it is attributed specifically to the author. It reflects the general principle present in our juridical system by which everyone is entitled to have an acknowledgement and a recognition for the paternity of their own actions and the relative results. Indeed, in this case the legislator chose the word "paternity" not casually, but to metaphorically highlight the bond between the author and the creation, a direct and indissoluble connection. Furthermore, the law mentions a right, not an obligation, as the author is not required to disclose his/her identity to the public. In fact, the interest protected by the provisions is not to reveal to third parties the generalities of the creator, but it is instead to remit to the latter the ultimate decision of if, when and how eventually divulge such information as well as to oppose to any act of false attribution possibly made by anyone else. In the paternity right then two dimensions are coexisting, a positive and a negative one. Negative because, as clearly expressed by art. 21 l.a., the author has the right to not disclose the own identity and to publish the work in an anonym form, or to choose a pseudonym, a stage name, or any other possible sign, leaving always open the option to change mind and reveal later the own true specifications. A positive dimension, instead, as the creator has a perpetual right to obtain, even judicially if needed, the indication of the own name on the work and their usage forms. Additionally, the non-negotiable character of the right of paternity suggests that are not legitimate contractual agreements which establish the attribution of the titularity to another subject, different to the author, in exchange of a remuneration, i.e. it seems not to be allowed in Italy the practice of the ghost writing.

### 6.3 The right of integrity

Art.20 l.a. recognizes another moral right to the creator, which is the right of integrity of the intellectual work, and basically consist in the prerogative of the author to oppose to any injurious act of deformation, modification, or alteration of the work as well as any gesture that could cause a damage to the author's honor and reputation. Two elements are embedded and encapsulated in this description, which can be analyzed on different levels. In objective terms, the behavior that could constitute a violation of the work integrity can happen directly (as for example significant scenes cut in a cinematographic work), or incidentally (acts that change the perceived value in the public, in the context, circumstances or modalities related to how the work is presented or used). From a subjective point of view, all the acts previously mentioned could be considered as infringements of the moral right of the work integrity only when they cause, or have the potential to produce, the effect of compromising the honor and reputation of the creator. Namely, there will be most likely a concrete breach in such right when the act performed on the intellectual work, or causing harm to the latter, will generate a prejudicial effect on the personal honor and reputation of the author, of his/her perception of himself/herself or of the perception by the public. However, the legislator poses a limit to this general rule, stated in art.22 (2) l.a.: the author could not be able to claim protection on this matter if he/she has previously acknowledged and accepted the modifications on the intellectual work.

Conversely, it is still much debated the case whether, or not, it constitutes a violation of the integrity of the work, when a third party destroys an intellectual work, finding generally a positive answer only when this elimination happens in discrediting ways.

A marginal role, for its rare occurrence, has the right to withdraw the creation from the market, it is displayed by art.142 and 143 l.a., and it is another personal prerogative of the author. The latter can indeed file for a court order/injunction to inhibit the future sale, diffusion, execution, representation, distribution, or better any further activity in the commercialization of the intellectual work. The Italian legislature imposes rather strict conditions to exercise such right, citing particularly severe moral reasons, which have to be additionally assessed and confirmed by the judge. The intention of the

legislator is aimed to exclude the cases of a mere afterthought or change of heart of the author, as the implication that derives from the execution of this entitlement could harm the economic interests of other subjects, such as the ones that have acquired the patrimonial exploitation rights.<sup>83</sup>

## 7. The resale right

Particular attention is paid to the resale right, to which it dedicates artt. 144-155 l.a. and is generally defined as the right of the author to obtain a compensation, in a form of percentage form, for every professional future sale (after the first) of artworks and manuscripts, providing contextually the delineation of the perimeter of such entitlement.

It is a prerogative of an economical nature, but in some forms, it reveals itself as atypical: it has the same temporal limit as patrimonial rights, and yet cannot be the object of a transfer or refusal by the same author, sharing therefore the fact not to be renounceable and inalienable as normally are the moral rights.

Such entitlement also finds an international recognition in the EU directive 2001/84/EC<sup>84</sup>, and it is normally identified with the name “resale right”, but it is widely known too as *droit de suite*, according to the French definition, as France was the first nation to have it introduced it in 1920.

The *ratio* behind such provision lies in the peculiarities of the art market, where the works are usually realized in unique pieces, or limited editions, and are normally exploited only through their first proper sale. A transaction that most of the times happens with a rather low remuneration, especially when artists are at the beginning of their career. Indeed, differently to what observed in many other types of intellectual

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<sup>83</sup> G. SPEDICATO, (nt.56).

<sup>84</sup> 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, <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32001L0084&from=EN> .

creations, in the visual arts the works usually acquire an increasing value with the course of time or with the growing notoriety of the author. Therefore, the artist could risk not to benefit in the more elevated appraisal of their creation, if he/she is entitled only to the economical result given by the first sale<sup>85</sup>. The aim is hence to «[...] redress the balance between the economic situation of the authors [...] and other creators who benefit from successive exploitations of their works» as it reads in art.3 of the directive 2001/84/EC.<sup>86</sup>

As previously mentioned, the Italian law establishes precise limits in the exercise of the resale right, it is applicable only to the sales, after the first, made with the intervention of professionals, in the qualities of buyers, vendors, or intermediaries, citing auction houses, art galleries, and in general any professional commercial trader (art.144 l.a.). The applicability of the norm has some temporal limits as well, taking in consideration only the sales made three years after the first transfer carried out by the author.

Furthermore, the provision is valid with sales of more than € 3.000,00 of figurative art works, giving a non-exhaustive list such as paintings, collages, drawings, engravings, prints, lithographs, sculptures, tapestries, potteries, glassware, photographs, and manuscripts. The copies of the visual art works can be considered as originals if they are produced in a limited number by the same author with a numeration and the signature, or alternatively duly authorized by the same creator (art.145 l.a.).<sup>87</sup>

The consequence of such conditions is the exclusion from the scope of protection of all the private deals, hence the ones executed without the involvement of subjects considered as professionals in the field. A further exemption is operated in relation to the sales that, with the participation of a professional, are acquired directly from the

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<sup>85</sup> G. SPEDICATO, (nt.56).

<sup>86</sup> 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, (nt.84).

<sup>87</sup> L.G. Ubetazzi, P.G. Marchetti, *Commentario breve alle leggi su proprietà intellettuale e concorrenza*, Quinta edizione, CEDAM, Breviaria Iuris, 2012.

author in the preceding three years and with a selling price not exceeding €10.000,00. In any case, all the transactions reporting a price less than €3.000,00 are disregarded.<sup>88</sup> Where all the criteria are satisfied, the author's remuneration is calculated on the selling price, and it is charged to the subject acting as a vendor. It will be then a responsibility of the professional intermediaries to ensure the respective monetary collection and the deposit of this sum to SIAE (the Italian Society of Authors and Editors), which in turn will arrange the transfer to the entitled rightsholder.<sup>89</sup>

Art.150 l.a. establishes how to determine the correct amount object of the resale right, indeed it is calculated in percentage terms, imposing decreasing shares the higher is the selling price, and for a maximal remuneration of €12.500,00 to the author.<sup>90</sup>

## **8. Collective Management Organizations (CMOs) in Italy and their development**

In the previous paragraph, the Italian Society of Authors and Editors (SIAE) was briefly mentioned because it is initially the recipient of the author's remuneration deriving from the artwork sale, and later the entity in charge of forwarding the remuneration to the entitled right holder. Indeed, in a first approximation it can be said that the organization collectively manages the author's rights in Italy, but it is a generalization that needs further and deeper analysis.

Its duties are expressed in art.180 (2) l.a. and can be summarized as the concession of licenses and authorizations on the behalf, and interest of, the rightsholder for the economic utilization of protected works. Moreover, its activities comprehend the

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<sup>88</sup>SIAE, *Il diritto di seguito – Vademecum*, Sezione OLAF, Versione aggiornata al 21 gennaio 2021, [https://www.siae.it/sites/default/files/SIAE\\_OLAF\\_Vademecum\\_DDS.pdf](https://www.siae.it/sites/default/files/SIAE_OLAF_Vademecum_DDS.pdf).

<sup>89</sup> G. SPEDICATO, (nt.56).

<sup>90</sup>SIAE, *Il diritto di seguito per i professionisti del mercato dell'arte*, [https://www.siae.it/sites/default/files/11\\_29\\_Guida\\_al\\_DDS\\_per\\_i\\_Professionisti\\_20\\_09\\_17.pdf](https://www.siae.it/sites/default/files/11_29_Guida_al_DDS_per_i_Professionisti_20_09_17.pdf).



reception of the remunerations deriving from such licenses and authorizations, and lastly, the distribution of the sums among the entitled subjects.<sup>91</sup>

Historically, Collective Management Societies (CMOs) were born in the second half of the XIX century, constituted by authors, editors, and their heirs with the aim to create a more easiness in the negotiations and administration of the economic rights, avoiding therefore complex situations where the creators needed to interface with a vast number of individuals. It is clear and evident the potential difficulty of the artists without collecting societies, depicting a scenario where the authors must deal singularly with every person that in any way makes a use of their work. From the arrangements of the contract's terms and conditions to the credit collection of the sums, passing through the surveillance and enforcement in case of infringement, the activities are numerous and probably on a vast scale.

The genesis of such organizations originates, then, from the exigency of lowering the transactional costs and reducing the time needed to perform every action, thus with advantages for both the artists and users, interfacing therefore with only one subject.

Indeed, SIAE too was born with such intention, being entitled by the legislator to perform and exercise its duties as expressed in the art.180 l.a. Particularly, it was configured as a public non-profit organization supervised by the Ministry of the Cultural Heritage, the Ministry of Economy and Finance, and by the Government Council Presidency. Aimed to satisfy the interests of the community, it was established on a membership base, meaning that the authors and editors conclude with SIAE a mandate contract with which they become associates while the entity manages the creator's rights.

Moreover, generally the CMOs are organized on a territorial base, finding specular organizations abroad with basically the same functions and activities, such as for example in Germany with GEMA, in France with SACEM, in Spain with SGAE. With over 150 of them SIAE concluded reciprocal representation agreements to address effectively and efficiently the cases where users and creators were established in different

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<sup>91</sup> A. SPEDICATO, A. FERRETTI, S. PRIMICERI, *Rivoluzione d'Autore. Il diritto d'autore tra presente e futuro*, Primiceri Editore, Padova, 2015.

countries. This strengthens furthermore the advantages for the parties, having always to deal with only one organization even when considering multiple states.

Originally, the Italian legislator attributed solely and exclusively to SIAE the activities described in art.180 l.a., but in the last couple of years there has been some developments because of the entry in force of the Directive 2014/26/EU<sup>92</sup>, also known as the “Barnier Directive”. This directive fundamentally imposed to all the member states to modify the status of legal monopoly according to which collecting societies were operating, establishing furthermore that the creators, independently from the nationality, can confer the mandate to any other organization in relation to the management of their author’s rights. Special consideration is needed on the fact that the directive doesn’t explicitly impose the modification of the exclusivity regime of the CMOs, but from the wording of art.5 it does seem to implicate it.

The Italian legislature transposed the Barnier Directive by means of d.lgs. n.35 of March 15<sup>th</sup> 2017<sup>93</sup>, but only in the later autumn, with the European Commission’s threat in opening a sanctioning procedure, the Government finally modified the national legislation at art.180 l.a., hence providing for the exercise of such activities by other collecting societies as well. Therefore, the national legislative framework provides the end of SIAE’s legal monopoly, at least on a theoretical level, because art.2 of the d.lgs. 35/2017 establishes specific conditions for the organizations that want to operate in that capacity.<sup>94</sup> They basically must be entities that do not pursue lucrative intents and

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<sup>92</sup> DIRECTIVE 2014/26/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 26 February 2014 on collective management of copyright and related rights and multi-territorial licensing of rights in musical works for online use in the internal market, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AAOJ.L.2014.084.01.0072.01.ITA> .

<sup>93</sup> DECRETO LEGISLATIVO 15 marzo 2017, n. 35 , Attuazione della direttiva 2014/26/UE sulla gestione collettiva dei diritti d'autore e dei diritti connessi e sulla concessione di licenze multiterritoriali per i diritti su opere musicali per l'uso online nel mercato interno, <https://www.gazzettaufficiale.it/eli/id/2017/03/27/17G00048/sg> .

<sup>94</sup> REDAZIONE MEDIALAWS, *Diritto d’autore, la Corte Costituzionale conferma lo stop al monopolio della SIAE*, 17 Luglio 2020, <https://www.medialaws.eu/diritto-dautore-la-corte-costituzionale-conferma-lo-stop-al-monopolio-della-siae/> .

are organized on a membership base. Hence, on a practical level the ones that satisfy such requisites have already concluded reciprocal representation agreements with SIAE. Therefore, the Barnier Directive and its transposition in the Italian legal system marked on paper the end of SIAE's exclusivity status, while finding however a rather difficult implementation of this concept.

The decision nonetheless opened the debate over the true aim of the provision and the possible developments since many people initially interpreted such modification as a first step towards an increasing liberalization of the author's right management system. Indeed, the possible future hypothesis of opening this market to other entities and organizations foresees on one side the option for creators to be able to freely decide which organization will administer their entitlements. On the other hand, however, there is the risk of an over-fragmentation in the intermediation services, which could make unclear and difficult for users the identification of the correct middleman.

The Barnier Directive also led many people into thinking a possible scenario where Collective Management Organizations are altogether avoided, while suggesting a direct participation of artist in the administration of their entitlements with the support of the newest technologies, identified for instance with blockchain<sup>95</sup>.

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<sup>95</sup>M. BACCI, *Monopolio SIAE e gestione collettiva dei diritti d'autore*, <https://www.iprights.it/monopolio-siae/amp/>.

# **CHAPTER FOUR**

## **NON-FUNGIBLE TOKENS (NFT)**

### **Table of contents**

- 1. New words in the vocabulary**
- 2. ERC 20 and ERC 721 standards**
- 3. The NFT Gold Rush**
- 4. NFTs in the art world**
- 5. A new notion of scarcity and value**

### **Introduction**

The rapid and disruptive emergence of blockchain and smart contracts brought many innovations in the digital world, in just a few years they have revolutionized many spheres of different sectors, while still presenting the potential of transforming even more. One of the many applications and evolutions witnessed was undoubtedly the introduction of Non-Fungible Tokens (NFTs), which particularly in 2021 reached wide notoriety and recognition for its properties. Through its peculiarities and characteristics, it has fascinated a diverse public: from artists and consumers to collectors and professional dealers.

Chapter four will explore the NFT phenomenon, specifically its attributes and qualities, as well as the fundamental traits that marked a turning point in many markets, observing principally the art one.

## 1. New words in the vocabulary

Non-Fungible Tokens can be considered as a relatively recent technology, indeed its concrete conventional genesis is attributed in 2017, and since then its applicability has reached numerous fields. To analyze and better appreciate the true range of this development, and its implication, it is necessary to take a step back and to understand the basis on which it is established.

Besides blockchain and smart contracts, which chapter 1 and 2 of this dissertation dealt with, further explanations are needed on few other words, that in a first approximation, could be seen as synonyms and therefore interchangeable, but on the contrary they have a precise meaning, representing different concepts.

Indeed, the contemporary vocabulary saw the introduction and proliferation of new terms, and their even more frequent usage, such as (virtual) coins, tokens, crypto-assets, and of course NFTs.<sup>96 97</sup>

Starting from a wider delineation, coins are generally associated to a specific blockchain being generated and distributed in it, and they usually serve the functions of a currency, according to their different preeminence. As a matter of facts, their purposes can range including a reserve of value, a payment method, and/or a unit of account, highlighting the fact that each coin has their own characteristics, observing that not necessarily all three functions must be fully comprehended. A valid exception in this case is Bitcoin, which is demonstrating itself to absolve these activities *in toto*, perhaps for its vast circulation or its higher degree of maturity, to the point that it is being called the “digital gold”.

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<sup>96</sup>R. LICHENE, *NFT è la parola dell'anno secondo il dizionario Collins*, Corriere della Sera, 26 novembre 2021, [https://www.corriere.it/tecnologia/21\\_novembre\\_26/nft-parola-dell-anno-secondo-dizionario-collins-b123a5d6-4e9f-11ec-b469-c1722a8a0160.shtml?refresh\\_ce](https://www.corriere.it/tecnologia/21_novembre_26/nft-parola-dell-anno-secondo-dizionario-collins-b123a5d6-4e9f-11ec-b469-c1722a8a0160.shtml?refresh_ce).

<sup>97</sup>A. FLOOD, *NFT beats cheugy to be Collins Dictionary's word of the year*, The Guardian, November 24<sup>th</sup> 2021, <https://www.theguardian.com/books/2021/nov/24/nft-is-collins-dictionary-word-of-the-year>.

After the introduction of Bitcoin, many new tokens were created leading off and paving the way to the establishment of the so-called crypto assets, namely a category which comprehends the many and different types of digital products.

Tokens, differently from before, don't usually have their own blockchain, leaning hence on the ones used for storing, trading, registering coins, that is to say that anyone can issue a token and register it for example on Ethereum, instead of creating a whole new Decentralized Ledger Technology (DLT). Generally, they are embedded in a smart contract, which regulates their limits and possibilities of use, basically to the discretion and creativity of its author. The freedom in the definition of the characteristics of new tokens brought to a multiplication, or better an exponential growth, of them with various forms and different functionalities. A situation that ultimately concerned the legislator to the point of intervening and look for a possible legislative framework in which they could be reported.

The Swiss Financial Market Supervisory Authority (FINMA) was among the first ones to identify a possible classification of the wide range of tokens composing crypto assets, publishing in 2018 a first delineation.<sup>98</sup>

The logic behind this effort, and the successive ones, is to analyze and trace back the singular tokens in circulation to legal cases already existing, specifically proper of electronic payments or financial markets. A "bottom-up" approach used also by the latest "Proposal for a Regulation of the European Parliament and of the Council on Markets in Crypto-assets", known also as MiCA Regulation<sup>99</sup>. The latter was published in 2020 with the contribution of the papers "Report with advice for the European Commission on Crypto-Assets" of the European Banking Authority (EBA)<sup>100</sup> and "Advice

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<sup>98</sup> FINMA publishes ICO guidelines, February 16<sup>th</sup>, 2018, <https://www.finma.ch/it/news/2018/02/20180216-mm-ico-wegleitung/>.

<sup>99</sup> 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 final, Brussel, September 24<sup>th</sup> 2020, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020PC0593>.

<sup>100</sup>Report with advice for the European Commission on Crypto-Assets, EBA, January 9<sup>th</sup>, 2019, <https://www.eba.europa.eu/sites/default/documents/files/documents/10180/2545547/67493daa-85a8-4429-aa91-e9a5ed880684/EBA%20Report%20on%20crypto%20assets.pdf>.

on Initial Coin Offerings and Crypto-Asset” of the European Securities and Market Authority (ESMA) <sup>101</sup>, both issued in January 2019.

The prevailing European orientation on the definitory level of crypto assets, therefore, seems to converge on a taxonomy based in three main categories: payment/ exchange/ currency tokens, investment tokens, and utility tokens.

The first class, as suggested by the name, is commonly referred to crypto currencies, which in general do not provide particular rights to the holder and are normally used as means of exchange, with investment purposes, and/or value storage. Valid examples can be Litecoin and Bitcoin, and Stablecoin too. The latter is new token aimed to correct and stabilize the great volatility that usually characterize virtual currencies, offering typically physical or crypto assets as collaterals.

The second category, investment tokens, usually include some types of entitlements, as for example ownership rights and/or forms of dividends. Examples, in the context of capital raising, can be Initial Coin Offerings (ICO) when issuing asset tokens, which basically allow businesses to acquire funds for the development and execution of their projects through the emission of digital tokens in exchange of fiat money or crypto assets.

The last class, utility tokens, generally give an access to a service or a product often using Decentralized Ledger Technologies (DLT) platforms and are not usually accepted as a payment method. An example can be a token issued with the intention to facilitate an access in a context of a cloud service.<sup>102</sup>

This taxonomy leaves rather uncovered and unattended the qualification, always in a definitory perspective, of the eventual so-called *hybrid tokens*, namely digital products that do not strictly belong in any category above mentioned, as they possess typical peculiarities of different categories. On this regard, the debate is still considered far from closed, especially when it cannot be identified a prevalence of a function or component on the others. Moreover, to look at the objective and intrinsic nature of a

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<sup>101</sup>Advice on Initial Coin Offerings and Crypto-Asset, ESMA, January 9<sup>th</sup>, 2019, [https://www.esma.europa.eu/sites/default/files/library/esma50-157-1391\\_crypto\\_advice.pdf](https://www.esma.europa.eu/sites/default/files/library/esma50-157-1391_crypto_advice.pdf).

<sup>102</sup> Report with advice for the European Commission on Crypto-Assets, EBA, (nt.100).

token sometimes cannot be enough, as for the case of the *mutant tokens*, which can modify their character accordingly with the usage made.<sup>103</sup>

Also the Italian Supervisory Authority for the national financial product market (CONSOB) intervened on this subject-matter with the publication of a report in January 2020<sup>104</sup>, confirming the European classification. In fact, it has clarified that the juridical qualification of tokens, already in circulation or with a future emission, must be verified following the taxonomy of security, payment, and utility tokens, and considering furthermore all the possible combinations that comes from these three categories. The attribution of a token in a one class, rather than another, implies a different discipline applicable.

In any case, a univocal identification of the token's taxonomy and the related aspects is still open, due not only for the complexity of the subject, but also for the rapid developments of the crypto-assets ecosystem.<sup>105</sup>

## 2. ERC 20 and ERC 721 standards

As mentioned in paragraph 4.1, basically, tokens are crypto assets, created and managed in smart contracts which defines their characteristics and features. To date, there are many protocols and platforms that allow the coding of smart contracts to create tokens, but one of the most used is certainly Ethereum with its first token standard, the ERC 20.<sup>106</sup>

The qualities and fundamental traits of Ethereum, as well as the principles which led to its genesis, were briefly explained in paragraphs 2.3 and 2.4. Indeed, based on a

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<sup>103</sup> F. ANNUNZIATA, A. CONSO, *NFT L'arte e il suo doppio, Non Fungible Token: L'importanza delle regole, oltre i confini dell'arte*, Milano, Montabone Editore, 2021.

<sup>104</sup> Le offerte iniziali e gli scambi di crypto-attività, Rapporto finale, CONSOB, January 2nd 2020 [https://www.consob.it/documents/46180/46181/ICOs\\_rapp\\_fin\\_20200102.pdf/70466207-edb2-4b0f-ac35-dd8449a4baf1](https://www.consob.it/documents/46180/46181/ICOs_rapp_fin_20200102.pdf/70466207-edb2-4b0f-ac35-dd8449a4baf1).

<sup>105</sup> F. ANNUNZIATA, A. CONSO, (nt.103).

<sup>106</sup> F. ANNUNZIATA, A. CONSO, (nt.103).



continuous innovation, it was designed almost as a collaborative project, where individuals could advance new ideas, suggestions, thoughts, and critics with the aim of always improving the current system. To manage such proposals, which were later debated and commented, a forum was created by Ethereum's development team with a simple functioning. When a collaborator wanted to advance a novel object, it was submitted with an Ethereum Improvement Proposal (EIP); if once discussed, it was finalized and accepted, then it would transform itself in a new standard with the name of Ethereum Request for Comment (ERC).

Since the beginning, Ethereum's vision was to be more than just a blockchain, and that is why tokens were immediately considered as a vital component in the facilitation of the functionalities of smart contracts and decentralized applications.

One of the firsts Ethereum Improvement Proposals (EIP) was advanced in November 2015 by Fabian Vogelsteller with the aim of creating a new token standard. It was the twentieth on the forum, so that is why, once accepted, it became the ERC 20.

Many tokens are still issued with, or in compliance with, such standard, as it allows a remarkable usability of the token in the exchanges and in the wallets<sup>107</sup>; moreover, its general structure requires some ordinary features and functions with the possibility of the additional options on the discretion of the author.

ERC 20 is also known to be a standard for fungible tokens, which means that any unit can be substituted by another of its kind without having any differences in its value or functions. Basically, the items can be freely interchanged among them, as no particular or unique property is attached to that specific token<sup>108</sup>: money can perfectly fit this case, as for example a banknote of ten euros has the same worth and use of another bill of the same amount and currency. A specular situation happens too in the crypto world, if for instance a user desires to buy determined assets or services, deposit or exchange currency, the payment will be a certain quantity of tokens, and the verification will occur on the sum of them and not to the specifics of singular ones.

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<sup>107</sup> H. HALABURDA, M. SARVARY, G. HAERINGER, (nt.41).

<sup>108</sup> A. M. ANTONOPOULOS, G. WOODS, (nt.42).

Besides the fungibility which characterizes many tokens, first and foremost generally cryptocurrencies, the community studied and introduced another standard that valued the peculiarities of a token to the point of transforming them in a form of distinctiveness. In 2018 William Entriken, Dieter Shirley, Jacob Evans, and Natassia Sachs developed the ERC 721, a new token standard based on its non-fungibility<sup>109</sup>. The latter, differently from before, implies that a substitution for an identical unit is not possible, as each item has an intrinsic and an individual nature. Particularly an NFT has three singular characteristics: uniqueness, as it virtually represents or certify a specific asset, digital or not, that is associated in a univocal manner with a user or in a virtual wallet; indivisibility, since it cannot be split or separated into smaller parts; and lastly, non-interchangeability, because they are not fungible and replicable.

NFTs are marked therefore by their originality, they cannot be exchanged for the same amount of the same type, as each one has its own special characteristics<sup>110</sup>. They consist of information and data that differentiate and identify unequivocally and specifically each one. As a matter of facts, the ERC 721 standard allows the possibility to contain metadata, more than any other available standard at that time, comprehending ERC 20. With the latter, they share only the creation, transfer, and extinction rules.

Furthermore, in 2018 another standard was introduced, the ERC 1155, which has the characteristics of being agnostic in regards of its fungibility, or not, and additionally it consumes less gas. It can be, hence, used to develop different classes of tokens with a sole standard, leaving to the user the possibility to choose its uniqueness, or lack of it. All three standards co-exist and are used accordingly to personal preferences of the issuer and few commonsense rules.<sup>111</sup>

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<sup>109</sup> F. ANNUNZIATA, A. CONSO, (nt.103).

<sup>110</sup>EU Blockchain Observatory and Forum, *NFT - Legal Token Classification*, <https://www.eublockchainforum.eu/sites/default/files/research-paper/NFT%20-%20Legal%20Token%20Classification.pdf> .

<sup>111</sup> F. ANNUNZIATA, A. CONSO, (nt.103).

### 3. The NFT Gold Rush

The conventional year associated with the genesis of the NFT phenomenon is widely considered to be 2017 as previously mentioned in paragraph 4.1. It corresponds indeed with the emergence of CryptoPunks and CryptoKitties, fundamentally two virtual games originated as tryouts which later will reveal themselves as crucial milestones in the crypto history.

Particularly, CryptoPunks started as an experimental project of the New Yorker company Larva Labs, which basically created a collection of 10.000 images in 24x24 pixel art of 8 bit each, inspired by the misfits and eccentrics of the Londoner punk movements and scenes.<sup>112</sup> Their characteristics are, by all means, that of NFTs, they were generated by algorithms and each one of them was unique, one of a kind, and not modifiable. Initially, they were distributed for free, charging only the Ethereum fee, and only subsequently it was established a marketplace where they could be traded and exchanged. Indeed, today the digits and volumes reach rather significant amounts, the most expensive one, #3100, was sold on March 11<sup>th</sup>, 2021, for 4200 ether, the equivalent of 7.58 million dollars.<sup>113</sup>

Always in 2017, the blockchain-based game CryptoKitties was created by the Canadian startup Axiom Zen, and it fundamentally allows users to buy and sell exclusive and special digital cats through the Ethereum network. Particularly, the kitties' characteristics mark their uniqueness with differences for example in relation to the colors, the types of eyes or the whisks, all sorts of attributes that are practically embedded in the cat's code which is considered to be its DNA. The platform also permits the owners to breed these virtual animals among them, and hence to create new kitties with some characteristics of both parents, that can be once again valued and exchanged

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<sup>112</sup>CHRISTIE'S, *10 things to know about CryptoPunks*, April 8<sup>th</sup>, 2021, <https://www.christies.com/features/10-things-to-know-about-CryptoPunks-11569-1.aspx> .

<sup>113</sup>The Official Website of Cryptopunks, <https://www.larvalabs.com/cryptopunks> .

for their peculiarities. Indeed, a rampant success that even brought in December 2017 to a congestion in Ethereum caused by the many transactions.<sup>114</sup>

The two projects above definitely became very popular in a record time all over the world, shining a light on the NFT technology and its potential. Indeed, since the late 2017 numerous and different initiatives were seen in many contexts, underlining even more the great versatility of such tokens.

As mentioned in paragraph 4.1, another year that revealed itself as crucial in the relatively brief history of NFTs was undoubtedly 2021, where the technology truly reached a wide notoriety and popularity.

It started in February with the auction of an NFT related to Nyan Cat, which is basically an animation of a flying cat with a Pop-Tart body leaving a rainbow trail, a sale worth 300ETH, corresponding at the moment roughly to more than \$880,000.00.<sup>115</sup> The digital creation was originally elaborated by Chris Torres in 2011 as a meme and across the years it has been shared and viewed millions of times. For its tenth anniversary the author decided to mint it and put it up for sale, witnessing almost a bidding war in the final hours of the auction. As perceived and claimed by the same creator later, this transaction truly marked the opening of the floodgates<sup>116</sup> for the NFT market.

Soon after it was the turn of the platform *NBA Top Shot* of Dapper Labs<sup>117</sup>, where the digital collectors could purchase highlight packs, namely short videos and moments of the most salient parts of the games, of the past as well as of the present, certified and in a limited edition. Once acquired, the fans can also trade them again, always on the online marketplace, putting up for auction the NFTs, arriving to exceptional bids such as the one of 210.000 dollars related to the athletic abilities of LeBron James of The Los

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<sup>114</sup> S. CHEVET, *Blockchain Technology and Non-Fungible Tokens: Reshaping Value Chains in Creative Industries*, May 10<sup>th</sup>, 2018, [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3212662](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3212662).

<sup>115</sup>The NFT Auction of Nyan Cat and its details, <https://foundation.app/@NyanCat/foundation/219>.

<sup>116</sup>E. GRIFFITH, *Why an Animated Flying Cat With a Pop-Tart Body Sold for Almost \$600,000*, New York Times, February 22<sup>nd</sup> 2021, <https://www.nytimes.com/2021/02/22/business/nft-nba-top-shot-crypto.html>.

<sup>117</sup> The Official Website of NBA Topshot, <https://nbatopshot.com>.

Angeles Lakers.<sup>118 119</sup> The remarkable and astonishing attention received by the basketball platform truly started a fever in the sports world, spreading quickly to many other disciplines. Baseball for example saw the company Topps starting a collaboration with the blockchain WAX<sup>120</sup> engaging in the commercialization of NFTs digital collectibles such as special moments and virtual trading cards of the players.<sup>121</sup>

Soccer, on the other hand, was also a pioneer in the introduction of the so-called Fan Tokens, which are digital collectable resources generally minted on the blockchain Chiliz, that are able to give the possessors voting rights on surveys and polls, VIP awards, exclusive promotions, chat forums, games and contests, among many others. All these initiatives are aimed to establish a closer and better connection between the fans and the clubs.<sup>122</sup>

Going beyond the sport world, NFTs were seen to be used in many more other fields, prospecting wide and different directions, while putting on the market eccentric and interesting details.

Newspapers' headlines were dedicated in March 2021 to the purchase of the NFT associated to the first ever tweet wrote on the platform, made by Jack Dorsey in 2006, and sold for \$2.9 millions<sup>123 124</sup>, an initiative started with Mark Cuban auctioning too in

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<sup>118</sup>C. ZHANG, S. GERMANO, *Collectors pay big money for a slice of blockchain basketball action*, Financial Times, March 6<sup>th</sup>, 2021, <https://www.ft.com/content/8ef91ab2-4a9d-4e67-a7a2-2136f174a8b7> .

<sup>119</sup>K. BROWNING, *How "Put That on Top Shot!" became a New N.B.A. Mantra*, The New York Times, May 13<sup>th</sup> 2021, <https://www.nytimes.com/2021/05/13/business/nba-top-shot-moments.html> .

<sup>120</sup>The Official Website of the Topps ® MLB NFT Collection, <https://toppsmlb.com> .

<sup>121</sup> L.J. TRAUTMAN, *Virtual Art and Non-Fungible Tokens*, 50 Hofstra Law Review, Forthcoming, April 11<sup>th</sup>, 2021, [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3814087](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3814087) .

<sup>122</sup> M. SCHARNOWSKI, S. SCHARNOWSKI, L. ZIMMERMANN, *Fan Tokens: Sports and Speculation on the Blockchain*, December 21<sup>st</sup> 2021, [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3992430](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3992430) .

<sup>123</sup>J. HARPER, *Jack Dorsey's first ever tweet sells for \$2.9m*, BBC, March 23<sup>rd</sup>, 2021, <https://www.bbc.com/news/business-56492358> .

<sup>124</sup>M. ARMENTAL, *Jack Dorsey's first tweet sells as NFT for \$2.9 Million*, The Wall Street Journal, March 22<sup>nd</sup>, 2021, <https://www.wsj.com/articles/jack-dorseys-first-tweet-sells-as-nft-for-2-9-million-11616455944> .

February on of his tweets<sup>125</sup>. As a matter of facts, famous social networks announced in January 2022 the exploration of the innovative tokens and its possible incorporation into their technology<sup>126</sup>. Particularly, Twitter already implemented the option for its users to display an NFT purchase as the profile picture, allowing therefore a connection between their digital representation on the platform with crypto wallets<sup>127</sup>. Differently, Facebook's chief executive Mark Zuckerberg was more interested in NFTs as a support for the avatars marketplace in the planned metaverse<sup>128</sup>.

Also the music industry manifested an immediate curiosity and interest in the technology. Starting with the DJ star 3LAU, that at the end of February 2021, celebrating the three years anniversary of his album *Ultraviolet*, putted up for auction 33 NFTs, among which there were even custom never-heard-before songs.<sup>129</sup> <sup>130</sup> The sales reached the equivalent of \$11.7 million, marking indeed several records and an instant success<sup>131</sup>, to the point that in November of the same year the artist announced a collaboration with Christie's in the NFT auction of the song *WAVEFORM* on the platform

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<sup>125</sup> The NFT auction of Mark Cuban's tweet, [https://v.cent.co/tweet/1355995109733621762?s=v\\_s](https://v.cent.co/tweet/1355995109733621762?s=v_s).

<sup>126</sup>W. OREMUS, *Why are Twitter and Facebook embracing NFTs? We love status symbols*, The Washington Post, January 22<sup>nd</sup> 2022, <https://www.washingtonpost.com/technology/2022/01/22/facebook-twitter-nft-profile-pics/>.

<sup>127</sup> TWITTER, *Informazioni sulle immagini del profilo NFT su Twitter*, <https://help.twitter.com/it/using-twitter/twitter-blue-fragments-folder/nft>.

<sup>128</sup>H. MURPHY, C. CRIDDLE, *Facebook owner Meta dives into NFT digital collectibles craze*, Financial Times, January 20<sup>th</sup>, 2022, <https://www.ft.com/content/2745d50b-36e4-4c0a-abe0-e93f035b0628>.

<sup>129</sup>The NFT auction of 3LAU, <https://nft.3lau.com/#/auction>

<sup>130</sup>OPENSEA, *Ultraviolet Vinyl Collection by 3LAU*, <https://opensea.io/collection/ultraviolet-vinyl-collection-by-3lau>

<sup>131</sup>A. BROWN, *Largest NFT Sale Ever Came From a Business School Dropout Turned Star DJ*, Forbes, March 3<sup>rd</sup> 2021, <https://www.forbes.com/sites/abrambrown/2021/03/03/3lau-nft-nonfungible-tokens-justin-blau/?sh=3448e2424643>.

OpenSea.<sup>132 133</sup> Another relevant initiative in the music industry was the one of the American band Kings Of Leon in March 2021, presenting the album *When You See Yourself* in an NFT version other than the classics vinyl and download.<sup>134 135 136</sup>

It is recent too the statement of SIAE (the Italian Society of Authors and Editors) reporting its partnership with Algorand in the creation of 4 million NFTs related to 95 thousand artists in the attempt to manage copyright on musical creations in a more transparent and organized way.<sup>137 138</sup>

Furthermore, even the publishing and news sector, which firstly saw and began the narration of such events, didn't watch passively the phenomenon, and became fascinated as well in the technology. For example, The Time magazine transformed three of its covers into Non-Fungible Tokens<sup>139</sup> and putted them for auction on the marketplace SuperRare<sup>140</sup>, while later announcing the acceptance of cryptocurrencies

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<sup>132</sup>CHRISTIE'S, *Christie's New York Presents WAVEFORM By 3LAU in Christie's X OpenSea Sale*, November 29<sup>th</sup> 2021, <https://www.christies.com/about-us/press-archive/details?PressReleaseID=10314&lid=1> .

<sup>133</sup>OPENSEA, 3LAU – WAVEFORM, <https://opensea.io/assets/0x7908e11e21fb82429a0d2687770472723ae8148d/680564733841876926926749214863536422913>

<sup>134</sup>P. SOLDAVINI, *Dai Kings of Leon arriva il primo album disponibile anche via criptovaluta*, Il Sole 24 Ore, 5 marzo 2021, <https://www.ilsole24ore.com/art/dai-kings-of-leon-arriva-primo-album-disponibile-anche-via-criptovaluta-ADClb9NB> .

<sup>135</sup>OPENSEA, NFT Yourself, Kings of Leon, <https://opensea.io/assets/0x557430421f8f3ed0a92aca211f1c05ad7b606288/0> .

<sup>136</sup>S. HISSONG, *Kings of Leon will be the First Band to Release an Album as an NFT*, The Rolling Stones, March 3<sup>rd</sup> 2021, <https://www.rollingstone.com/pro/news/kings-of-leon-when-you-see-yourself-album-nft-crypto-1135192/> .

<sup>137</sup>P. SOLDAVINI, *Il diritto d'autore diventa asset digitale su blockchain*, Il Sole 24 Ore, 29 marzo 2021, <https://www.ilsole24ore.com/art/il-diritto-d-autore-diventa-asset-digitale-blockchain-ADwWtTSB> .

<sup>138</sup>SIAE, *SIAE rappresenta i diritti degli autori con asset digitali: creati più di 4.000.000 di NFT sull'infrastruttura di blockchain Algorand*, 24 marzo 2021, <https://www.siae.it/it/iniziativa-e-news/siae-rappresenta-i-diritti-degli-autori-con-asset-digitali-creati-più-di-4000000> .

<sup>139</sup>TIME STAFF, *Time releases 3 special edition NFT Magazine Covers for Auction*, March 22<sup>nd</sup>, 2021, Time <https://time.com/5948741/time-nft-covers/> .

<sup>140</sup>SUPERRARE, *TIME is Fiat Dead?*, <https://superrare.com/artwork-v2/time-is-fiat-dead-21652> .

as payment method for online subscriptions.<sup>141</sup> The New York Times, instead, auctioned an NFT related to just one column, which sold for more than half a million dollars.<sup>142</sup>

Rather interesting is also the evolution of the agri-food industry in the crypto-assets business: initially it started with the blockchain technology, which allowed a complete traceability and optimization in the production chain therefore reducing, or even avoiding, food waste; and now it has arrived in restaurants with curious initiatives, such as granting illimited access to the premises and services only if the potential customer owns an NFT.<sup>143</sup>

A similar idea was also explored by the Bored Ape Yacht Club<sup>144</sup>, officially launched on April 30<sup>th</sup>, 2021, it has conquered in a very short time a global attention. Particularly, the creators offered a collection of 10,000 NFTs representing cartoons of grungy and unimpressed apes, where each one of them is different for example in the accessories, clothes, colors, and/or expressions.<sup>145</sup> Basically, the users acquiring the unique token can claim, not only the ownership of the latter by displaying it in the e-wallet, but also the membership and access to a small circle of events<sup>146</sup>, such as literally yacht parties.<sup>147</sup> Indeed, it was a lack of the sense of community missing in Internet that

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<sup>141</sup> *Time Partners with Crypto.com to Offer Cryptocurrency as a Form of Payment for Digital Subscription*, April 19<sup>th</sup>, 2021, TIME, <https://time.com/5955969/time-partners-with-crypto-com/> .

<sup>142</sup>K. ROOSE, *Why Did Someone Pay \$560,000 for a Picture of My Column?*, *The New York Times*, March 26<sup>th</sup> 2021, <https://www.nytimes.com/2021/03/26/technology/nft-sale.html> .

<sup>143</sup>M.BECCHI, *NFT: l'ascesa dei non fungible token nel mondo della gastronomia*, *Il Gambero Rosso*, 19 gennaio 2022, <https://www.gamberorosso.it/notizie/nft-lascesa-dei-non-fungible-token-nel-mondo-della-gastronomia/> .

<sup>144</sup>The Official Website of BAYC, <https://boredapeyachtclub.com/#/>

<sup>145</sup>S. HISSONG, *How Four NFT Novices Created a Billion-Dollar Ecosystem of Cartoon Apes*, *The Rolling Stones*, November 1<sup>st</sup> 2021, <https://www.rollingstone.com/culture/culture-news/bayc-bored-ape-yacht-club-nft-interview-1250461/> .

<sup>146</sup>J. GAPPER, *The Bored Ape Yacht Club is more than an NFT joke*, *Financial Times*, December 17<sup>th</sup>, 2021, <https://www.ft.com/content/bd7c31c8-7212-4ad8-b560-0c99529091f4> .

<sup>147</sup>S.D. KOMINERS, *Most NFTs Are More Like Baseball Cards Than Fine Art*, *Bloomberg*, January 22<sup>nd</sup>, 2022, <https://www.bloomberg.com/opinion/articles/2022-01-20/most-nfts-are-more-like-baseball-cards-than-fine-art> .



inspired furthermore the founders in conceptualizing this project, along with the idea of creating a personal digital identity.<sup>148</sup>

Therefore, as demonstrated with the above examples, many industries engaged with an active exploration of the NFT sphere, and many more are now manifesting an eagerness in a possible participation, such as the real estate sector.<sup>149 150</sup>

#### 4. NFTs in the art world

The NFT phenomenon reached a new record in 2021: the enormous amounts of money that was circulating brought a global attention on the matter, unleashing different opinions on who sustained and appreciated the technology and who, instead, criticized it. Indeed, many people did not stop at simply talking about it, and proceeded with a personal involvement, hence contributing to a market evaluation estimated to be around 40 billion dollars only in that particular year<sup>151</sup>.

Very renowned and undoubtedly exemplary was the sale made by the famous auction house Christie's on March 11<sup>th</sup>, 2021, with an NFT related to a completely digital artwork titled "Everydays: The First 5000 Days".<sup>152</sup> The latter is a collage of indeed 5000 pictures made every day for thirteen years, between 2007 and 2021, posted regularly in the artist's social media. Particularly, the creator Beeple, a pseudonym for the true identity

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<sup>148</sup>K. CHAYKA, *Why bored ape avatars are taking over Twitter*, The New Yorker, July 30<sup>th</sup> 2021, <https://www.newyorker.com/culture/infinite-scroll/why-bored-ape-avatars-are-taking-over-twitter> .

<sup>149</sup>K. WATERWORTH, *Will NFTs in Real Estate be a thing in 2022?*, NASDAQ, December 30<sup>th</sup> 2021, <https://www.nasdaq.com/articles/will-nfts-in-real-estate-be-a-thing-in-2022> .

<sup>150</sup>N. KARAYANEVA, *Real Estate NFT: How It Began*, Forbes, November 24<sup>th</sup> 2021, <https://www.forbes.com/sites/nataliakarayaneva/2021/11/24/real-estate-nfts-how-it-began/?sh=3437f4473b12> .

<sup>151</sup>H. Murphy, J. Oliver, *How NFTs became a \$40 bn market in 2021*, Financial Times, London, December 31<sup>st</sup>, 2021, <https://www.ft.com/content/e95f5ac2-0476-41f4-abd4-8a99faa7737d> .

<sup>152</sup>S. REYBURN, *JPG File Sells for \$69 Million, as 'NFT Mania' Gathers Pace*, The New York Times, March 25<sup>th</sup>, 2021, <https://www.nytimes.com/2021/03/11/arts/design/nft-auction-christies-beeple.html> .

of Mike Winkelmann, conceived daily an intellectual work, ranging from a basic drawing to 3D illustrations, which were later used to organize and compose a sole creation. The artwork was then minted on February 16<sup>th</sup>, 2021, creating the related NFT that was put for auction at the initial price of \$100.<sup>153</sup> Among the many contenders who animated the last minutes of the bid, Metakovan, a founder of the crypto based firm Metapurse, purchased the token for the equivalent of more than 69 million dollars.<sup>154</sup> The sale distinguish itself also for being the third highest paid artwork acquired from a living artist, after *Rabbit* of Jeff Koons and *Portraits of an Artist (Pool with two Figures)* of David Hockney, and for being only related to the NFT.<sup>155</sup>

A month later was the turn of another famous auction house, Sotheby's<sup>156</sup>, which established a partnership with the crypto artist Murat Pak, and offered for sale an illimited number of digital "cubes".<sup>157</sup> They were basically rotating parallelepipeds belonging to the wider *The Fungible Collection*, and sold altogether 23.500 pieces for a total amount of 17 million dollars.<sup>158</sup>

Indeed, the interest and curiosity towards the technology and its compatibility for the art market reached auction houses in March 2021, which fueled furthermore the

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<sup>153</sup>CHRISTIE'S, *Beeple's Opus, Created over 5,000 days by the groundbreaking artist, this monumental collage was the first purely digital artwork (NFT) ever offered at Christie's*, <https://www.christies.com/features/Monumental-collage-by-Beeple-is-first-purely-digital-artwork-NFT-to-come-to-auction-11510-7.aspx> .

<sup>154</sup>P. SOL., *Christie's debutta nelle criptovalute: con 69,3 milioni di dollari è record per l'arte digitale*, Il Sole 24 Ore, 12 Marzo 2021, <https://www.ilsole24ore.com/art/christie-s-debutta-criptovalute-693-milioni-dollari-e-record-l-arte-digitale-ADwogoPB> .

<sup>155</sup>CHRISTIE'S, *Everydays: the First 5000 Days, Beeple, Details and Lot Essay*, <https://onlineonly.christies.com/s/first-open-beeple/beeple-b-1981-1/112924> .

<sup>156</sup>E. ROCCELLA, *NFT Mania, Sotheby's entra in corsa con Pak*, 8 aprile 2021, Exibart, <https://www.exibart.com/mercato/nft-mania-sothebys-entra-in-corsa-con-pak/> .

<sup>157</sup> Sotheby's, *The Fungible Collection, Digital Catalogues* <https://www.sothebys.com/en/digital-catalogues/the-fungible-collection-by-pak> .

<sup>158</sup>K. CROW, *Digital Artist Pak Sells NFT Works for \$17 Million at Sotheby's*, April 14<sup>th</sup> 2021, The Wall Street Journal, <https://www.wsj.com/articles/sothebys-enters-nft-market-with-17-million-sale-of-art-by-enigmatic-artist-pak-11618429617> .

exposure and consideration on the matter, gaining wide attention and even beginning to conquer the most traditional collectors and player.

Remarkable and fascinating initiatives were seen across the world in just a few months, where artists manifested their creativity with NFTs in many and innovative ways. It is, for example, the case of Refik Anadol<sup>159</sup>, who coined the notion of “data painting” as he was able to combine the machine learning techniques and algorithms in the creation of artworks<sup>160</sup>. The result has been truly astonishing and marvelous, becoming currently one of the most important media artists<sup>161</sup>, curating *inter alias* with Sotheby’s the auctioning of the NFT collection titled *Machine Hallucinations*<sup>162</sup>.

Besides the examples just mentioned, NFTs do not limit themselves to digital artworks, as they have fascinated too the traditional world too, with the so-called tokenization of physical creations. On this regard, an interesting event happened in May 2021 when the Uffizi Gallery made a digitalization of the artwork *Tondo Doni* of Michelangelo, through an encryption and cryptographic technology named DAW® (Digital Art Work) developed and patented by the Italian company Cinello. After the creation of the virtual version, it was ensured and certified its uniqueness, non-copiability, and ownership by creating an NFT, which was later sold for a total amount of 140.000 euros. As agreed with the innovative business, the museum only received the half of it, constituting nevertheless an important achievement.<sup>163</sup> Not only it combined the benefits of the off-chain world with the on-chain one, but also showed a new method to retrieve funds, demonstrating the existence of a viable and profitable secondary market for masterpieces.<sup>164</sup> Soon after, also the Russian Hermitage Museum announced the creation of NFTs related to

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<sup>159</sup> The Official Website of the Artist Refik Anadol, <https://refikanadol.com>.

<sup>160</sup> MOMA, *Modern Dream: How Refik Anadol is Using Machine Learning and NFTs to Interpret MoMA’s Collection*, November 15<sup>th</sup>, 2021, <https://www.moma.org/magazine/articles/658>.

<sup>161</sup> F. TAGLIABUE, *Refik Anadol, l’artista dell’umanesimo digitale*, Living Corriere della Sera, 19 ottobre 2021, <https://living.corriere.it/tendenze/arte/refik-anadol/>.

<sup>162</sup> SOTHEBY’S, *Machine Hallucinations – Space: Metaverse NFT Collection*, <https://www.sothebys.com/en/digital-catalogues/machine-hallucinations-space-metaverse>.

<sup>163</sup> M. PIRRELLI, *Gli Uffizi sdoganano il Tondo Doni in versione NFT*, Il Sole 24 Ore, 18 Maggio 2021, <https://www.ilsole24ore.com/art/gli-uffizi-sdoganano-tondo-doni-versione-nft-AEuiMFK>.

<sup>164</sup> F. ANNUNZIATA, A. CONSO, (nt.103).

some of their artworks, denying the sole financial purposes behind the decision, but rather sustaining the attempt to explore this novel medium. Undeniable is, however, the positive effects that such sums constitute for museums, especially after the massive losses incurred in this pandemic.<sup>165</sup>

Indeed, several more examples can be found, as the spread of this phenomenon doesn't seem to stop, wandering and exploring the many applications and finding innovations almost every day.

## 5. A new notion of scarcity and value

The cases explored and mentioned in paragraphs 4.3 and 4.4 gave an idea of the enthusiasm and interest which has characterized the crypto world recently, a sphere in a constant increase fascinated by the achievements and potentials.

The combination of different technologies allowed them to reach and serve many purposes excellently, as the groundbreaking properties and attributes were acknowledged and widely recognized. One of these is undoubtedly the notion of scarcity that NFTs brought into the digital realm and to better understand this novelty it is necessary to take a step back in an analog world, analyzing particularly the shift to the current one.

In this case, with the term analog world it is meant the period of time until the advent of Internet and the World Wide Web, indicatively then before the late 1980s and early 1990s<sup>166</sup>, hence prior to the technologies and tools at disposal today.

In the past the mechanism by which data was flowing and being shared relied on different grounds, for instance that the replication of information implied a cost, as well

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<sup>165</sup> F. VALEONTI, A. BIKAKIS, M. TERRAS, C. SPEED, A. HUDSON-SMITH, K. CHALKIAS, *Crypto Collectibles, Museum Funding and OpenGLAM: Challenges, Opportunities and the Potential of Non-Fungible Tokens (NFTs)*, 2021, <https://www.mdpi.com/2076-3417/11/21/9931> .

<sup>166</sup> CERN, *A short history of the Web*, <https://home.cern/science/computing/birth-web/short-history-web>.

as the production, diffusion, representation, or any act of exploitation of it. Fundamentally, the circulation of lawful copyrighted material required a substantial investment, either in the creation, or in the distribution, or both, and indeed too in any attempt of counterfeits. In this case, to ensure a protection and to enforce remedies in case of infringements, the legislator formulated and designated provisions that generally relied on a restriction of the distribution, as mentioned in paragraphs 3.1 and followings.

With the introduction and later diffusion of the web protocols, the underlying framework fundamentally changes, because it is potentially available a global connection to everywhere in the world, independently of the physical location of the computers and people. Here information is shared and transmitted almost immediately, with negligible costs and normally as many times as wanted, facing indeed a completely new situation and paradigm.

Basically, the dynamism of the brick and mortar faced two major provocations brought by the internet. The first one is that the introduction of digital media significantly marked a detachment of the act of creation from the ones of production and distribution, which brought to the second one that is a democratization of the content diffusion. Artists and authors do not need any more publishers, record companies or intermediaries to distribute their work once created, as now anyone can practically transmit them to others usually without incurring in any costs or losses in terms of quality. These changes altered the creative industries, since contents are not any more a scarce resource and once generated there are no virtual expenses in their reproduction.<sup>167</sup>

The latter situation brought many thinkers to reflect on the consequences and potential scenarios, and a relevant contribution was made in this sense in 1994 with a riddle expressed by John Perry Barlow. He basically considered that in this age intellectual property can be reproduced without limits, instantaneously distributed anywhere in the world, without even incurring in any expenses, and later he asked how it was possible

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<sup>167</sup>M.A. LEMLEY, *IP in a World Without Scarcity*, March 24<sup>th</sup>, 2014, [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2413974](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2413974).

to protect the productions of the mind, and how creators would be able to obtain a compensation for it.

In response to this dilemma, Barlow did not offer a clear solution, but he surely hypothesized that the human minds would find innovative methods to obtain a remuneration in this new economy, adapting to the new reality, indeed as he noted that artists and authors are creative people after all.<sup>168</sup>

A concrete answer to the above conundrum has been suggested with the diffusion of blockchain, but more in particular with the rise of NFTs.<sup>169</sup> As a matter of facts, for their intrinsic characteristics it is clear and understandable on what grounds this claim has been made. As explained in paragraph 4.2, they are by definition unique, non-fungible, and indivisible, allowing therefore a precise and univocal identification of online assets which brings as a consequence an ensured scarcity and verified ownership. The latter concepts are notoriously difficult to be archived online, where contents and digital creations flow freely, and where copies can be made in an infinite number and sometimes being even perfectly identical to the original work. In this context, NFTs represent a shift in the paradigm for digital art and other forms of online media, as they bring the same endowments of the physical world in the virtual one too.<sup>170</sup> Aside from the peculiarities and characteristics of a creative work or of its author, particularly appreciated and valued have always been the rarity and certificates of authenticity which basically attest the uniqueness and singularity of the creation.

Indeed, generally speaking, people usually assign the notions of scarcity and uniqueness either an economical value, or a sentimental one, or sometimes both. Normally, in monetary terms, the willingness to pay for an item increases the more it is scarcer; while from an emotional point of view, a particular attachment to an object can arise due to

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<sup>168</sup>P. SAMUELSON, K. HASHIMOTO, *The Enigma of Digitalized Property: A Tribute to John Perry Barlow*, August 7<sup>th</sup>, 2019, [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3426244](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3426244).

<sup>169</sup> S. CHEVET, (nt.114).

<sup>170</sup> SOTHEBY'S, *NFTs: Redefining Digital Ownership and Scarcity*, April 6<sup>th</sup>, 2021, <https://www.sothebys.com/en/articles/nfts-redefining-digital-ownership-and-scarcity>.

its particular history for example.<sup>171</sup> Concepts that on a physical level are well-established to the point of almost being obvious, but on the contrary in the digital realm cannot be said the same. Knowing that for instance a painting is special and exclusive or characterized by a peculiar past such as a distinctive former owner usually increases its value and worth, and now with NFTs it is not different.

That is a reason why Non-Fungible Tokens were perceived as groundbreaking innovation, a possible solution to Barlow's riddle, since they introduce in the online world and incorporate these concepts: a unique, irreplaceable, indivisible, and verifiable token which represents a particular asset, may it be physical or digital, on a blockchain.<sup>172</sup>

Basically, in simpler terms, it can be also described as a certificate of ownership, registered on a blockchain, that certify the ownership of a file on the Internet, but interestingly it doesn't preclude others to enjoy the creation. It is almost the opposite, the more an NFTs is seen, appreciated, and understood, the more chances it has to increase in value.

Furthermore, thanks to the decentralized ledgers technologies the origin of a token is always available and can be tracked, easily establishing the authenticity of it, a fundamental guarantee for collectors and art communities in secondary markets. An assurance given also by the immutability of records which deprive the possibility of manipulations or alterations after the creation, and later circulation, of the NFTs.

The smart contract incorporated in it can also be programmed for instance to render commissions or regular payments every time a certain occurrence happens, a simple and yet revolutionary fact, whose consequences will be explored in chapter 5.

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<sup>171</sup>J. FAIRFIELD, *Tokenized: The Law of Non-Fungible Tokens and Unique Digital Property*, April 7<sup>th</sup>, 2021 [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3821102](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3821102) .

<sup>172</sup> F. VALEONTI, A. BIKAKIS, M. TERRAS, C. SPEED, A. HUDSON-SMITH, K. CHALKIAS, (nt.165).

# CHAPTER FIVE

## NFTS AND THE AUTHOR'S RIGHTS: OPPORTUNITIES AND CHALLENGES

### Table of contents

1. The breakthrough of NFTs in the author's rights
2. Ownership and the sphere of action
3. Fulfilling the *droit de suite*
4. Not all that glitters is gold

### Introduction

NFTs presented itself as a revolutionary technology, it combined blockchain's rigidity, which allows *inter alia* an immutability and transparency of records, with smart contracts' ductility, that permits a wide and rich flexibility reaching numerous fields. It is always possible to establish the origin, to know who created it, to track every transfer made and for which price, and to explore the conditions of the disposal.

The result has been undeniable fascinating, a digital certification of uniqueness related to an asset that represents the property of the token, basically a non-duplicable proof of ownership of the NFT itself. Indeed, an interesting and unprecedented proposition which foresees a bright future, but, at the same time, raises in turn many questions and doubts, first and foremost by jurists. Numerous aspects and profiles are under scrutiny, especially regarding their impact in the intellectual property rights sphere, on their protection, enforcement, and remedies in cases of infringement.



Chapter five will concentrate on some of these interrogatives regarding NFTs from the author's right perspective, highlighting the potentialities and critical issues.

## **1. The breakthrough of NFTs in the author's rights**

The possible application of NFTs in many areas has been evident and undisputed, they have conquered many sectors reaching great attention and an acclaimed popularity. Specifically, one of the main fields that has been interested since the beginning surely is the art one, finding a compatibility between the necessities of the market on one side and the offerings given by the technology on the other.

NFTs can be described also as a collection of metadata, a series of information that allow a univocal identification of the underlying object, above which is constructed a smart contract that regulates the content and the boundaries of the transfer. Usually, this set of data doesn't include the item of reference itself, but only a link that points and directs to it on a dedicated platform.

Through the mechanisms of blockchain, any transaction is accurately recorded, and it cannot be later changed or manipulated, assuring therefore a degree of certainty in the immutability and correctness of the ledger.

NFTs then seem to pose as another tool at disposal to address some of the critical issues of copyright in the digital sphere, offering an appealing opportunity for an efficient, transparent, and decentralized management of the author's entitlements in relation to their works.<sup>173</sup>

Indeed, the core problems seen were identified mainly as piracy, a lack of clarity about the legal status of the intellectual work, and a difficulty for the creators to get a fair compensation. The first one basically happens when the right owners lose control on the usage of the creations in Internet, through the generation and circulation of unauthorized copies; the second one relates to the issues that anyone faces while trying

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<sup>173</sup> F. ANNUNZIATA, A. CONSO, (nt.103).

to determine the subject who holds the titularity of the entitlements, as some of these information are scattered in different databases managed by a multitude of entities, such as for example record companies, publishers, collecting societies, which not always have even an incentive to share those data; and lastly, a lack of an adequate remuneration for the authors, due to the numerous jurisdictions involved and their formalities, relevant transactional costs, and the presence of intermediaries in the value chain that, in some cases, exert a high bargaining power.<sup>174</sup>

Given the intrinsic characteristics of the technology, NFTs can therefore represent positively a solution, or at least partially one, to the above issues. In particular, blockchain allows an increase in the visibility and accessibility of information about the history and the creation of the token. Important and relevant to mention in this case is the provision of the timestamping function embedded in the chain, which permits to identify the exact moment related to the occurrence of a certain event, in many cases with an accuracy that arrives even to the fractions of seconds. A key element that acknowledges the existence of a certain file or data at a certain specific time, without any doubt since the records cannot be later changed or eliminated. A certainty of great significance, especially in the business and legal world, that later has been recognized also by the European legislator through the eIDAS Regulation No. 910/2014 cited in paragraph 2.7. In this case, this function can be used for example to ascertain the presence of a work or creation in a precise moment, proving for instance the true paternity or when it was first made available to the public.

Moreover, NFTs have the possibility to indicate and specify precisely the underlying asset to which they refer, making univocal the relation between the latter and the token. Consequently, the individuality of that particular asset will acquire value by being taken as a starting point in the encryption and formulation of hash codes, disregarding therefore the multitude of other digital copies in circulation.

Lastly, but surely not less important, it is the capability of smart contracts to be written with wide margins of discretion by the parties, hence offering the option to revolutionize

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<sup>174</sup> A. I. SAVELYEV, *Copyright in the Blockchain Era: Promises and Challenges*, November 21<sup>st</sup>, 2017, [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3075246](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3075246)

*de facto* the mechanisms and dynamisms of the creative industries. Clauses can be inserted providing automatic payments directly to certain subjects, such as the authors, for example in relation to the circulation of their creation. Funds will arrive immediately in the e-wallets of the established parties, going beyond the multitude of obstacles that would be faced instead. Not only, it can be also taken in consideration the possibility to eliminate intermediaries, identified not only with banks and their commissions, but with middlemen in the value chain too. The terms and conditions, such as the royalties, could be therefore determined and provided in a fairer way for all the stakeholders involved in the creative process.<sup>175 176</sup>

However, the simultaneous feasibility of these potentialities opens in turn some concern, particularly in relation to the object of the sale, the ownership of which rights, the sphere of action at disposal of the subjects, and the protection of them, issues that will be discussed in the following paragraphs.

## **2. Ownership and sphere of action**

In the light of possible misunderstandings, one of the firsts interrogatives posed under scrutiny by many academics and professionals was to analyze the object of the sale of an NFTs especially in relation to the art world. Indeed, debates were opened over the interrogatives regarding the sphere of entitlements and range of actions at disposal of the buyer, which rights were transferred to the purchaser and which ones were not, particularly concerning to the copyright discipline.

NFTs, as said numerous times, are characterized by the traits of uniqueness, indivisibility, and non-interchangeability, which allow the formation of a univocal link between the token and the underlying asset. It is important in this case to underline the fact that NFTs can be created taking in consideration a native digital work of art, but at the same time it is possible to “tokenize” physical creations, i.e. productions of the mind

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<sup>175</sup> A. I. SAVELYEV, (nt.174).

<sup>176</sup> S. CHEVET, (nt.114).

originated firstly in the analog and off-chain world, and later transferred and represented in the electronic one.

Generally, it is deemed that that not all the rights in relation to the work of art and its economic exploitation passes directly to the NFT purchaser while buying it. To better understand this point, it is necessary to recall some notions and concepts expressed in chapter 3, starting from the distinction between the *corpus mysticum* and *corpus mechanicum*. Basically, the dichotomy originates from the separation of the intellectual work meant as a type of intangible property (in the first case), with its material support (in the second) which allows an effective fruition and circulation of the creation incorporated and embedded in it. Normally, if anyone were to buy for example a book, a painting, or a sculpture, he/she would acquire the titularity of the physical object, meant as the entity supporting the expression and result of the author's production of the mind, and he/she would be able to freely dispose of the item as established by art.832 of the Italian civil code. Indeed, the buyer can enjoy such work for instance by reading the book, by exhibiting it in their own library, or even gifting it to a friend, always in accordance with the limits and obligations imposed by the law. As a matter of facts, it is fundamental to highlight that the property of the intellectual effort will always be attributed to its creator, as well as any other faculty or act that relies upon the immaterial work, if not explicitly established otherwise in relation exclusively to the economic exploitation rights.

The same principles apply to the sale of an NFT, where in this case the purchaser would acquire only the titularity of the certificate, object of the transaction, and not automatically any other right directed to the commercial usage of the underlying intellectual work, unless agreed differently. The prerogatives recognized by the law to the author do not change solely on the base of the peculiarities regarding its digital nature, the entitlements are assigned immediately and directly by virtue of the work genesis to its creator. It is the latter that has the faculty of deciding to grant, or not, the authorization in relation to the usage in any form or method of its work, except in the cases provided by the law.

In some situations, indeed it happens that the creator transfers the economic exploitation rights to other parties, such as the ones of reproduction, transcription, execution, communication both to a present and distant public, and/or distribution, just to name a few. In this case, the law requires an express and explicit agreement among the parties involved, also recalling the notion of legitimate independence of these rights, one from the others. Therefore, it is necessary that the smart contract, which regulates the conditions of the transfer, provides information regarding if and what entitlements are passed on as well.

Moreover, it is a burden of the buyer to ascertain eventually which rights are comprehended, even tracing back to verify in the chain the prior terms of the sale, since the purchaser will respond in case of the unauthorized exercise of one of them even if committed unknowingly and in good faith. In this occurrence, it is interesting to notice how NFTs can reduce the risk of making these mistakes, since that the fact of relying on blockchain allows a transparent and immutable environment where past transactions are accessible to be consulted and examined.

Until now, only the economic exploitation rights were taken in consideration because, as already explained in paragraph 3.6, the moral rights cannot be the object of a transfer, sale, or rejection, by the author for their intrinsic nature of being inalienable, imprescriptible, and cannot be waived. These entitlements aim to protect the special bond between the creator and its work, defined even as paternal, and to prevent and oppose in any case of alteration that could cause a damage to his/her honor and/or reputation.

It is particularly curious also to analyze the situation cited at the beginning of this paragraph, where an NFT is based on a physical work of art, which has been later minted and used to create the token. Here the reality and the events happening nowadays offer many points of reflection. Indeed, there could be identified two assets, one represented by material support and the other by the digital one, with the consequence that the property of both could be transferred jointly in the same agreement, as well as the ownership of the two could be kept separated. In this regard, different and creative initiatives were seen by many artists but surely singular has been the one of Damien

Hirst. The British creator produced 10 000 works of art associating to each and every one of them a special NFT, while asking to the buyers which one of the two they wanted to keep. If the purchaser chose the physical asset, then the NFT would be destroyed with an operation denominated as burning; instead, if the customer wanted the crypto asset, then the author would eliminate the material support. The artist undoubtedly provoked thoughts and reflection on which one people would value more, an experiment that definitely generated a reflection on the notion of value today.<sup>177</sup>

It constitutes another circumstance where the buyer of a physical work of art creates an NFT based on it, and then destroys the material piece, with usually the aim of increasing its economic worth. It happened with Banksy and the creation titled *Morons*, purchased at the auction price of 30 thousand dollars and later sold as NFT on the OpenSea platform for the equivalent of 840 thousand dollars, while anticipating on Twitter a video showing the physical creation burning.<sup>178 179</sup> Inevitably this action opened debates over its legitimacy, if it was lawful in the first place that the creation of an NFT could have been done by a subject other than the author, and secondly if the later destruction of the physical work could have been possible. Following the principles established by Italian legislator, in a general approximation it could be said that the action of making the crypto asset could configure as an act of reproduction of the work of art, a prerogative of the artist as previously explained. This conduct could therefore constitute a violation in the rights attributed to the author if the entitlement wasn't formerly and expressly given to other parties. Concerning the second point, the national law doesn't seem to prohibit the destruction of the support, even in the case where the buyer doesn't have rational motivations in doing so. It is always provided, however, the

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<sup>177</sup>M.F. SIMEONE, *Il primo progetto di arte di Damien Hirst vale 25 milioni di dollari, per ora*, 26 agosto 2021, <https://www.exibart.com/arte-contemporanea/il-primo-progetto-di-arte-nft-di-damien-hirst-vale-25-milioni-di-dollari-per-ora/>.

<sup>178</sup>C. CRIDDLE, *Banksy art burned, destroyed and sold as token in "money-making stunt"*, March 9<sup>th</sup>, 2021, BBC, <https://www.bbc.com/news/technology-56335948>.

<sup>179</sup> V. MONTI, *Un altro Banksy distrutto. Bruciato, per trasformarlo in un NFT*, 8 marzo 2021, Artslife, <https://artslife.com/2021/03/08/burnt-banksy/>.

possibility for the author and the heirs to oppose to any form of manipulation, deformation or mutilation that could cause a prejudice in the honor and reputation.

None the less interesting is the situation presented by the Rijksmuseum, which saw one of their masterpieces called *The Night Watch* of the famous painter Rembrandt being tokenized and sold as an NFT without their consent. In particular, the museum, during the Covid-19 pandemic, digitalized and made available on their website their vast art collection, and shortly after, the Global Art Museum (GAM) basically minted the virtual canvas and created a Non- Fungible Token. In this case, it was established that there were no violations as the painting was already of public domain and accessible to everyone. A different result would have been concluded if for example the NFT gave access through a link to an exclusive part of the website, for example visible only to subscribers, constituting in this case an unauthorized act of communication to the public, which could be in contrast according to the art.3 of the EU Directive 2001/29/CE.<sup>180</sup>

It is fundamental to point out how difficult, if not impossible, it is to generalize such complex situations, underlying the necessity to analyze and study distinctively each case, since even the smallest details could bring a different result in the conclusions, whether, or not, an infringement has occurred for example.<sup>181</sup>

### **3. Fulfilling the *droit de suite***

One of the great advantages recognized to NFTs is undoubtedly represented by the possibility of keeping track of the token's circulation, since the blockchain structure allows an effective transparency in the transactions as well as an open visibility in its details. Widely appreciated were also the mechanisms of automatization introduced

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<sup>180</sup>A. LA ROSA, M. FOGLI, *La tecnologia NFT sfida le leggi copyright: tra iniziative legislative e profili di responsabilità. Il caso Rembrandt*, 6 novembre 2021, Studio Previti Associazione Professionale, <https://www.previti.it/la-tecnologia-nft-sfida-le-leggi-copyright> .

<sup>181</sup> F. ANNUNZIATA, A. CONSO, (nt.103).

and developed with smart contracts, which basically strengthen the reliability of the parties in the agreement's completions and give certainty of the consequences whenever certain conditions are presented. Characteristics that didn't go unnoticed by many artists, observing an interest applicability of this technology in their sector.

Specifically, the potentiality of smart contracts to be coded in such a way to comprehend and include in a completely automatic manner a remuneration to the creator each time the NFT was sold. Indeed, it could be calculated as a predetermined percentage of the selling price and then directly accredited in the e-wallet of the interested party every time the token would be bought.

This susceptibility of usage recalls the notion of the resale right, discussed in paragraph 3.7, and provided by the Italian law at the artt. 144 and followings l.a. Basically, it recognizes to the authors of protected intellectual works (namely, of works of art) a compensation, in relation of the sales subsequent to the first, and proportioned to the success of them. In particular, the legislator considers this entitlement as an inalienable right, which cannot neither be waived, establishing furthermore the conditions in which it can be applied, *inter alias* taking in consideration only the cases where there is the involvement of a professional dealer in the capacities of buyer, seller, or intermediary. Additionally, it establishes the burden of the sum on the seller and for maximal amount for €12.500,00, the latter must be deposited by the professional dealer to SIAE, which will be ultimately in charge of transferring it to the right owner.<sup>182</sup>

The provision of the *droit de suite* is particularly important to artists, as they are acknowledged a part of the success that derives from the future sales of their artworks. In many others creative fields, such as in the music industry or publishing, authors continuously obtain a profit from the licensing of reproduction and communication rights, while on the contrary, the visual artists do not benefit generally in the circulation of their creations. In facts, normally creators receive only a financial gain from their first deal, particularly penalizing since frequently artworks increase in its commercial value over time. A symbolic example that could be cited is undoubtedly the case of *Water*

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<sup>182</sup> F. ANNUNZIATA, A. CONSO, (nt.103).



*Dreaming at Kalipinypa*, a painting made by the indigenous artist Johnny Warangkula Tjupurrula, who firstly sold it in 1972 for \$75, and later saw it auctioned by Sotheby's in 1997 for \$263'154. Surely, a celebration and appreciation of the Aboriginal artwork, except from the fact that both the seller and the buyer refused to give any percentage to the author, which received in facts nothing. In 2000, the same painting was sold again for an even higher price, \$486'500, and as before no acknowledgment was granted to Tjupurrula, who was later described by the media as a starving impoverished artist victim of the market greed.<sup>183</sup>

Moreover, when provided by the legal system, the resale right is usually limited to the trades easily detectable, such as public auctions, excluding therefore all the private sales of artworks among individuals. It is the case of Italy too, which defines the sphere of applicability of this entitlement only in relation to the transactions with the involvement of a professional dealer. Curiously, it was estimated that the private sales of artworks are accounted for almost sixty percent of all arrangements, hence constituting an opaque and unregulated segment of the market. In such transactions, information are not publicly disclosed in any detail, building around this business a "wall of silence". To be fair, even public auctions have been characterized by an increasing and striking secrecy lately, where, for instance, third parties not participating in the sale do not have the same access to the data of the contenders. A silence that raises many doubts, starting from the information asymmetries among the agents and its economic implications, such as the possible lack of market efficiency with outcomes that could result far from optimal. By all means, the same artist could be even perfectly unaware in the first place of the sale of one of his/her creations. Looking at the secrecy from the law and policy perspective, it is evident that there could be room for fraud or deceit, facilitating unethical acts of foul play such as art theft or money laundering.<sup>184</sup>

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<sup>183</sup> Z. ZHAO, *Fulfilling the Right to Follow: Using Blockchain to Enforce the Artist's Resale Right*, *Cardozo Arts & Entertainment Law Journal* (Volume 39 Issue 1), 2019, [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3871892](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3871892).

<sup>184</sup>S. B. TURNER, *The Artist's Resale Royalty Right: Overcoming the Information Problem*, February 21, 2012, *UCLA Entertainment Law Review*, Vol. 19, No. 2, [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2009087](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2009087).

That is why blockchain-based solutions are looked with particular interest since that the intrinsic characteristics and peculiarities could be used to offer an alternative option. The decentralization of the distributed ledger systems allows to archive a deep transparency in record keeping and the transactions written in it, giving wide visibility in the data stored. A reliable technology assured by tamper-proof and non-repudiable mechanisms, that discloses the entire history of the sales and makes it fixed and permanent.

Furthermore, the incorporation of NFTs in the art world has the potential of disrupting the industry, starting from the possibility of giving a cryptographic digital identity to the work. Many opportunities present themselves, the token can be easily tracked and followed throughout the numerous transactions, hence preventing forgeries, and facilitating the authentication processes as the verifications can occur faster and cheaper. For every ownership change, it could effortlessly be provided a payment to the author, satisfying therefore the resale right, even when not provided by the legislation of a country. In this sense national borders and bureaucracy could be overcome with ease, as well as ensuring the same entitlement regardless of the location of the creator. Therefore, artist could be empowered anywhere in the world, contributing to their welfare and the one of their communities, fostering creativity and every form of expression. The same opportunities can be given *de facto* to everyone, leading to a more balanced, transparent, and equitable market.<sup>185</sup> Indeed, one of the latest reports available, particularly the one commissioned by the WIPO to the Standing Committee on Copyright and Related Rights (SCCR) on the artist's resale right, highlighted many profiles and aspects of uneven distribution of artists and their sales.<sup>186</sup>

NFTs have also the potential of reshaping the value chain of the visual arts industry, by for example helping and facilitating (or even replacing) the activities of middlemen like the Collective Management Organizations (CMOs), which usually acts as an intermediary

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<sup>185</sup> Z. ZHAO, (nt.183).

<sup>186</sup>J. FARCHY, K. GRADDY, F. RICHMAN, R. RICHMAN, *The Economic Implications of The Artist's Resale Right*, Report commissioned by the World Intellectual Property Organization (WIPO) in the ambit of the work of the Standing Committee on Copyright and Related Rights (SCCR) on the artist's resale right, Geneva, November 6<sup>th</sup>, 2017, [https://www.wipo.int/meetings/en/doc\\_details.jsp?doc\\_id=389676](https://www.wipo.int/meetings/en/doc_details.jsp?doc_id=389676).

between the creators and the successive users.<sup>187</sup> Remodeling this mechanism, the royalties could be maximized in their amount, due to an increased efficiency and a fostered cost-effectiveness, granted by the technology.<sup>188</sup> This possibility, however, doesn't seem fully feasible at the moment in Italy, since the current provisions on the matter impose rather strict conditions to exercise such functions, as it will be explained in the next paragraphs.

As cited previously, the *droit de suite* represents, in the practicality of the analog world, an entitlement characterized by difficult applicability especially for the visual arts sector, and indeed for many reasons as well. One is undoubtedly the territoriality of the provision, as not every country in the world has incorporated it in their legal framework, and even so, usually not with the same conditions, guarantees or enforcement. Furthermore, the secrecy around private deals excludes a major part of the market, hence constituting another obstacle for artists in claiming their entitlement of the resale right, while the confidentiality embedded in the public transactions doesn't generally permit to keep track of the artwork circulation. Indeed, the lack of transparency could be detrimental not only for the authors, but for the market itself and its operators too, in fact information asymmetries could expose the agents to many risks, first and foremost negotiations of forgeries claimed as true. Even when, finally, the resale right finds a fertile ground for its applicability, it could be limited in the amounts for the intervention of intermediaries, which inevitably represent a barrier in reaching the maximum efficiency and add possibilities for human errors, voluntary and/or incidental. NFTs challenge these complex problematics, posing as a potential solution to them, highlighting their natural ease in the applicability of the resale right. Indeed, the automatization and transparency of the mechanisms lend themselves and offer interesting opportunities to the creators and to the market. The technology constitutes a certainty for artists in effectively receiving a compensation for every future sale of their work, a guarantee on which they can rely on. This simple fact could have radical

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<sup>187</sup> Z. ZHAO, (nt.183).

<sup>188</sup> A. TRESISE, J. GOLDENFEIN, D. HUNTER, *What Blockchain can and can't do for Copyright*, Australian Intellectual Property Journal 144, 2018, [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3227381](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3227381).

consequences that could completely change the structure and functioning of the industry. Artists will not need to rely anymore only on their first sale, as they can receive a contribution every time their creations circulate, constituting therefore a continuous source of income. Therefore, even the initial approach of the authors to the market could be reformed, making a lower and more affordable initial proposition, and hence building an environment more accessible even to other segments of costumers.

#### **4. Not all that glitters is gold**

NFTs, as explained in paragraph 5.3, may easily fulfill the *droit de suite*, resolving inefficiencies and constituting a solution to numerous issues that characterize the nowadays creative industry, especially the one of visual arts. However, both the technology and the application don't come without worries and skepticism, underlying many critical aspects that deserve attention and caution as well.

Starting with the many concerns expressed on the environmental sustainability of NFTs, since the technology at the moment requires a substantial amount of energy in the mining operations, particularly in the proof-of-work validation processes. The high need for electricity and its possible ecological impact, especially when fossil based, have already discouraged many artists in entering or working in the crypto world. It is the case for example of Joanie Lemercier, who cancelled the production and sale of six NFT artworks after discovering that the ten seconds required to execute these operations would consume the same amount of energy used by his studio in two years.<sup>189</sup> Highlighting the many improvements and developments already archived on this

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<sup>189</sup> K. B. WILSON, A. KARG, H. GHADERI, *Prospecting non-fungible tokens in the digital economy: Stakeholders and ecosystem, risk and opportunity*, Business Horizons, 2021, <https://www.sciencedirect.com/science/article/abs/pii/S0007681321002019>.

matter, the need for more environmental-friendly solutions, that don't compromise the efficiency or security, is a challenge still to be resolved.<sup>190</sup>

Looking at the Italian legislation, a direct and decentralized management of the resale right at the moment raises concerns and doubts, but even if possible and admissible the amounts established in the smart contract could be calculated not in accordance with the rules, for example providing percentages either exceeding or undervaluing the ones recognized by the law.

Moreover, although the technology allows a wide visibility and accessibility to the details of all transactions, the national regulation still excludes from the scope of protection the sales among private individuals, explicitly manifesting the non-applicability of the resale right in those operations. Indeed, the discriminating factor in this context is represented by the presence of a professional intermediary that acts in the quality of vendor, buyer, or middlemen, but considering the prevalent anonymity of the crypto world, this classification could be considered quite difficult to ascertain. The professional agent could easily hide the true nature and the legal status of his/her actions, as well as confusion could be created in cases of particularly active users.

A similar reflection could be made too looking at platforms which enable the NFTs commerce, finding specifically ones that selects artists and organize events and launches (broadly considered as curatorial projects), and others that do not operate any kind of restriction (non-curatorial). By all means, the role of the platforms could be considered and interpreted in some cases as *de facto* a professional operating in the business, questioning here once again the border and limits of the definition, whether it could be extended to these marketplaces too. Going beyond the interrogation based on the curatorial trait, the same doubt can be posed when platforms offer a wide array of services, such as support in coding smart contracts, the possibility of data storage, assist in minting operations for instance.

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<sup>190</sup> N. MARTINOD, K. HOMAYOUNFAR, D. LAZZAROTTO, E. UPENIK, T. EBRAHIMI, *Towards a secure and trustworthy imaging with non-fungible tokens*, In Applications of Digital Image Processing XLIV. Vol. 11842. International Society for Optics and Photonics, 2021.

The presence of a subject operating in the capacity of a professional dealer in a transaction is indeed very important and relevant, as many juridical effects and consequences are linked, establishing the burden of duties, obligations and guarantees, and in this case also the sphere of applicability of the resale right.

The anonymity of the parties involved in such transactions could give cause to many other concerns, starting with the promise of authenticity of NFTs in relation to the artworks. Indeed, the assurance of the uniqueness and ownership of the underlying asset, to which the token refers, seems undisputed when it is an accredited artist or a famous auction house that sell directly the NFT, while on the contrary it should not be said the same for less renowned subjects that introduce in the market minted artworks. The buyer in this case should exercise great attention and consideration, analyzing and verifying firsthand the true origin and supposed authenticity, also in relation to the prerogatives that could be claimed.

While the chain of events can be easily and effortlessly tracked, experts debate over the validity of such information in the first place, as the decentralization structure generally isn't concerned on the verification of the work paternity, the effective existence and truthfulness of the claimed rights, basically the legitimacy and lawfulness of the first inputs. Consequently, numerous artists saw tokenized their creations by third parties and later sold as an NFT without their consent or knowledge. Not only, the authors encountered many difficulties as well in demanding and obtaining protection for the anonymity of users but also for the limits of the platforms in their interventions. The possibility of enforcement in cases of infringement of the author's rights seems potentially compromised, because, as we said numerous times no modifications or alteration can occur in blockchain, therefore restoring and reestablishing a lawful situation sometimes could result not as easy or granted. As a matter of facts, once a transaction is written and stored in chain of records, certain information and metadata will be permanently saved in all the nodes, leaving therefore no room for a later elimination of it.

Indeed, besides the many qualities and characteristics of NFTs there are numerous critical aspects as well, which could create circumstances that concretely and practically

could be perceived as unjust or unfair, making evident the need for a clear and specific regulation.<sup>191</sup>

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<sup>191</sup> F. ANNUNZIATA, A. CONSO, (nt.103).

## Conclusion

NFTs present and prospect a *vexata quaestio*, currently placing (probably) at the beginning of such debate, not only because their appearance has been rather recent but also for the newness of the many aspects and facets introduced. The numerous opinions expressed range from the most enthusiastic ones contemplating its revolutionary impact, to others more suspicious and skeptical highlighting the critical points.

In such dialogue, however, there seems to be only one certainty, which is the fact that it is a technology destined to stay and to evolve, the extent and significance of the innovations are truly groundbreaking, already finding an undisputed and undeniable market acceptance.

Above all, the uptake of NFTs in the visual art field has been compelling, an irresistible chance in the creation of a more transparent, equitable, and balanced environment, where the parties that operate in it potentially find a solution to the numerous problems found in the off-chain world.

Particularly appreciated by the artists was the spectacular ease in the application of the resale right, an entitlement characterized by a difficult recognition since its official establishment, and now it could be simply provided as an automatic payment embedded in the smart contract. Indeed, if a percentage of the transaction is directly accredited in the author's wallet every time the token circulates, then it would be effortlessly and effectively applied the *droit the suite*.

This concrete implementation, although, needs to be analyzed in the wider context offered by the legislative framework today in force, which impose certain conditions and limits in the modalities and execution of such right. Starting with, *inter alia*, the presence of a professional agent in the capacities of vendor, buyer, or middleman, to the maximum remuneration cap of €12.500,00 to the author, or the intermediacy role carried out by SIAE, the profiles under scrutiny are many.



The user's anonymity in blockchain networks could surely conceal the true nature of the actions performed, hiding the cases where is involved a professional or wrongly interpreting the ones of a particularly active individual. The national regulation clearly establishes that private sales of works of art are excluded from the scope of protection, hence to all the transactions without the presence of qualified expert won't be applied the resale right. Therefore, the traditional analog definition of a professional in the field is then challenged by the newest technologies, questioning its extent and boundaries.

The position of the platforms that enable such negotiations offer many points of reflection as well. Firstly, they could challenge once again the notion of professional agent for the many services provided to its users. Secondly, as they defy the role of Collective Management Organizations, as platforms could enable a direct, transparent, and automatic administration of the entitlements straightly by the creators, overtaking therefore the functions of the CMOs, their intermediation costs and errors. On this matter, the Barnier Directive indicates rather strict requirements to exercise such functions, such as for example the non-lucrative intents or the membership-based organizational requirement. Even if the latter constrains are difficult to archive in a concrete factual reality, they still represent a possibility and maybe the opening step for a further liberalization in the management of the economic exploitation rights. NFTs could be therefore considered as another stimulus to the Italian and European legislators to take a more decisive step towards the opening of such market to other organizations and entities as well.

Lastly, but surely interesting, it is the feasibility for the platforms to detached themselves from the two labels just mentioned of professional in the field and CMOs, stating hence to offer only an administrative support to its users. As cited before, this case is considered as a private sale and it automatically excludes the applicability of the resale right's laws and their protection offered, but there could be some advantages from it. The exemption of the resale right *ex lege* doesn't preclude the parties involved in the deal to still acknowledge a certain sum to the creator. Moreover, the calculus of such compensation wouldn't be conditioned by the regulation, abandoning thus the decreasing percentages currently established by the legislator and consequently even

providing the possibility to exceed the upper limit of €12.500,00, quite important when talking about multi-millionaires' bargains. Furthermore, the classification of the sale as a private transaction among the parties could avoid the numerous obligations and duties imposed to the subjects as well as the SIAE intermediation. This option could hence present a scenario where the *droit de suite* is applied *de facto* in the contractual clauses and not by the provisions of the law.

Only the course of time will reveal whether, or not, the trends of the market will favor the latter possibility, also considering that, at the moment, there isn't a specific legislation on this subject-matter. Hopefully, the *horror vacui* will cease to exist, providing therefore clear rules and norms in the definitions, the limits, and responsibilities for every agent involved.

Nonetheless, the opportunity to radically change the art sector is evident and immediate, represented not only by the NFT technology itself, but by its implications too. A concrete true applicability of the resale right could naturally bring the creators to modify their *modus operandi* in the market. The possibility of relying not anymore only on the first sale, but also on the subsequent ones, could effectively lead to an evolution in the consumers' approach and targets, lowering for example the initial proposition price and aiming to a greater circulation of the artwork.

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