The Legal Nature of Cryptoassets and their Protection under Property Law

Gregorio Damia Patiño

Supervisor: Nicola Lucchi
MA Avanzado en Ciencias Jurídicas
Universitat Pompeu Fabra
2022-2023

Abstract

The digital revolution has produced a dematerialization of the economy and the rise of new digital assets such as Cryptoasssets. Legal operations involving cryptoassets, particularly bitcoin, are controversial and do not fit properly in any existing legal category, thus, there are many legal uncertainties still unanswered. While lawmakers around the world have focused their attention on the regulatory aspects of Bitcoin, the most fundamental question remains largely unanswered: what is the legal nature of cryptoassets? The aim of this paper is to try to answer the question from a property law perspective and to analyze whether a bitcoin can be considered as an object of property law. Regarding the Common Law system, I argue that a bitcoin can be considered as personal property, however, it is a matter of discussion whether the creation of a third category is necessary or whether it is enough to rationalize the choses in action category. In Civilian Systems there are two different predominant property systems: the French and the German. French modelled systems recognize the possibility of considering an incorporeal as a thing capable of being an object of property law, however, their scope and definition remains unclear and Civil Codes offer little information about it. On the other hand, German modelled systems restrict the notion of a thing to only tangible and corporeals objects. I argue that a bitcoin should be protected by civilian systems as a thing, based on a functional analysis focused on the characteristics of the object rather than in the previous existing categories.

Keywords: Crpytoassets, Cryptocurrencies, Blockchain, Property Law, Common Law, Civil Law, Incorporeal, Intangibles.

Acknowledgements

En honor a Augusto.

TABLE OF CONTENTS

1 – INTRODUCTION **4**

2 – THE DIGITAL REVOLUTION AND THE DEMATERIALIZATION OF THE ECONOMY **6**

3 – BLOCKCHAIN, BITCOIN AND CRYPTOASSETS FRAMEWORK **8**

4 – HOW TO DEAL WITH CRYPTOASSETS **11**

4.1. – CRYPTOASSETS AS MONEY 11

4.2. – CRYPTOASSETS AS OBJECTS OF PROPERTY LAW 13

5 – COMMON LAW: DEALING WITH DIGITAL ASSETS **15**

5.1. BITCOIN AS PERSONAL PROPERTY 19

5.2. INTERIM CONCLUSION. 20

6 – CIVIL LAW AND DIGITAL ASSETS **20**

6.1. INTRODUCTION. FRENCH AND GERMAN SYSTEMS. 20

6.2. ROMAN LAW 22

6.2.1. General Principles 22

6.2.2. Concept and classification of res 23

6.2.3. The right of ownership 24

6.3. THE FRENCH CODE CIVIL AND THE ITALIAN CODICE CIVILE 24

6.3.1. Code Civil general principles 24

6.3.2. Codice Civile general principles 25

6.3.3. Code Civil Objects of Property Law 26

6.3.4. Codice Civile Objects of Property Law 28

6.5. OWNERSHIP IN FRENCH AND ITALIAN SYSTEMS 29

6.6. IMMATERIAL OR INCORPOREAL THINGS UNDER THE FRENCH AND ITALIAN SYSTEMS 29

6.7. BITCOIN AS AN IMMATERIAL THING 31

7 – THE GERMAN SYSTEM **34**

7.1. GENERAL PRINCIPLES 34

7.2. OBJECTS OF PROPERTY. 35

7.3. THE RIGHT OF OWNERSHIP 35

7.4. INTANGIBLE/ IMMATERIALS 36

7.5. BITCOIN AND GERMAN PROPERTY LAW 37

8 – CONCLUSION **40**

9 - BIBLIOGRAPHY **42**

1 – Introduction

As of the time of writing this paper, global capitalization of cryptocurrencies is estimated to be 1.18 trillion US Dollars, with a 24-hour transaction volume of 33.8 billion US Dollars.[1] It is evident that the biggest financial players of the world are already investing, testing, and developing applications on different blockchains and cryptocurrencies. Despite this reality, the law is often slow to catch up, creating uncertainty in many legal operations involving cryptocurrencies.

To address this uncertainty, lawmakers have focused their attention on the regulatory aspects of dealing with these assets. However, the most fundamental question remains largely unanswered: what is the legal nature of cryptoassets?

It is necessary to determine whether incorporeal assets, such as bitcoins, are protected by property law. This determination has enormous practical consequences, and lawmakers must aim to solve all the uncertainties surrounding the legal operations already underway. Questions such as whether a bitcoin can be "owned", "possessed", "stolen" or "entrusted"[2] or whether proprietary injunctions are possible, should be addressed.

Considering these issues requires challenging the fundamental principles of property law in both Common Law and Civil Systems. Common Law, based on the classic statement in 'Colonial Bank v Whinney (1885)'[3], defines personal property as either choses in possession or choses in action. Property law or the 'law of the things', in Civil Law systems, deals with legal relations between persons and things. Depending on the system, property rights exist only regarding tangible objects or also regarding intangible or incorporeal objects.

Bitcoin and other cryptocurrencies do not fit naturally into the existing private legal categories in both Common Law and Civil systems.[4] Consequently, legislators and courts are left with three possibilities: (i) denying the existence of cryptocurrencies as legal

---

[1] CoinMarketCap. Last viewed on April 1st, 2023 - https://coinmarketcap.com/

[2] J. G. Allen. Property in Digital Coin*s*. European Property Law Journal (EPLJ), 8, no. 1, 2019, 64-101.

[3] Colonial Bank v Whinney (1985) LR 30 Ch 261, LR 11 App Cas 426 (HL).

[4] Zellweger-Gutknecht, Corinne. Developing The Right Regulatory Regime for Cryptocurrencies and Other Value Data.2018.

entities, (ii) attempting to shoehorn them in the above-mentioned categories or (iii) reforming the current catalogue.[5]

Property law is well known for remaining static throughout the years, upholding principles and methods which have been in use for ages rather than incorporating new categories or concepts when technological evolution arose. Therefore, property law rules are structured in a way to either include or exclude new categories in an existing system.[6]

Given the significant role that cryptocurrencies play in everyday relations and with countries such as El Salvador recognizing bitcoin as legal currency, denying their existence as legal entities (i) does not seem a feasible option. Attempting to shoehorn them into existing categories (ii) may be the most common approach, however, it is not always the most optimal solution. Legal scholars are proposing a private law reform which contemplates a complete regulation of incorporeal objects (iii). This reform will not only solve the issues regarding cryptocurrencies, but it would also 'make our law of property in general more future-ready'.[7]

This Thesis will be structured in the following way: Firstly, I will introduce the notion of the cyberspace as new environment where people transact with dematerialized assets. Then, I will explain the functioning and nature of Bitcoin and showcase why they should not be conceived as money. Later on, I will try to show the challenges of considering a bitcoin as an object of property law for Common Law and Civil Law systems. The selection of systems could be described from a comparative law perspective as a systemic examination of a small number of cases through the 'most prototypical cases principle'[8]. Consequently, I will analyze English property Law as the most predominant Common Law system. Regarding Civilian systems, the French and the German models are the most predominant systems and I include the Italian system known for being modern and flexible to changes.

[5] J. G. Allen, Property in Digital Coins.

[6] Akkermans, Numerus Clausus, 7. The reason for this is that property law is not only concerned with legal relations between persons, but also with legal relations that have an effect against third parties, in some cases even against the whole world.

[7] J. G. Allen, Property in Digital Coins.

[8] Hirschl, Ran. "The Question of Case Selection in Comparative Constitutional Law." The American journal of comparative law 53, no. 1, 2005, 125–155.

2 – The Digital Revolution and the Dematerialization of the Economy

The digital revolution could be explained as the technological and social change produced by the development and improvement of a new type of computational technology and its application in everyday life. There are more mobile phones than inhabitants in the planet, millions of contracts are performed around digital assets[9] and tech companies are more powerful than countries in some cases. This inevitably leads to changes in economic and social aspects and the law is no exception.

The old Fordist paradigm has been transformed into a digitalized network society in which usability of intangible assets has increased considerably in recent years, dematerializing the economy by a complete digitalization of everyday objects. [10]

In this context, a reinterpretation of the foundational concepts of property law needs to be considered. Every day transactions involve bank money, data transfers, cloud services, electronic carbon emission bonds or a purchase of a house with cryptocurrencies.

Previously, intellectual property challenged traditional concepts of property law. The duality of *corpus mysticum* and *corpus mechanicum* was fundamental for the understanding of intellectual works as objects of property law, hence, for the acknowledgment of immaterial assets. The law creates a fiction where the support of the protected work (*corpus mechanicum)* is distinguishable from the work itself (corpus mysticum) where the latter it is considered the immaterial asset.[11]

Nowadays the Information Society is challenging the foundational notion of law: the center of economic wealth is not defined by the production of goods from goods, but through the production of information through information. Information *per se* has become the most valuable asset, it has value for itself, and it has legal and economic relevance.[12]

To solve the puzzle, it is crucial to understand the concept of cyberspace as a new intangible environment where people can relate with each other, not socially but economically.[13] The cyberspace can be understood as a distant global city, constructed upon virtual identities and with its own space-time axis. This new reality overlaps with

---

[9] Castillo Parrilla, José Antonio. Bienes Digitales: una necesidad europea. Madrid, Spain: Dykinson, S.L., 2018, 47.

[10] Knell, Mark. "The Digital Revolution and Digitalized Network Society." Review of Evolutionary Political Economy 2, no. 1 2021, 9-25.

[11] Castillo Parilla, Bienes Digitales, 53.

[12] Castillo Parilla, Bienes Digitales, 65.

[13] Castillo Parilla, Bienes Digitales, 56.

the physical reality continuously generating new forms of human interactions.[14] But it is more than just social interactions. It is a new parallel environment where people can interchange goods and services that are interconnected with the physical world.[15]

It is undeniable that the digital revolution has produced new forms of providing services, new forms of value and new things in a legal sense. The digital environment requires a revision of the traditional existing law foundational principles, and without a doubt property law has some serious challenges. In the last 10 years Courts have had to decide whether an allowance of carbon emission was property[16], whether a lien was possible over a database[17], whether ordering a proprietary injunction over a crypto wallet in an exchange holding bitcoin was possible[18] or whether it was possible to exercise the right of segregation over cryptocurrencies in a bankruptcy proceeding[19], just to mention a few cases.

If it is valid that the digital revolution has a new environment (cyberspace) where people can transact with new types of things in a legal sense, is it possible to solve the problems above-mentioned with the existing set of rules? If the answer is affirmative, how can we do it? If not, should the legislators re-adapt the existing categories, or is the change so disruptive that a complete reform is needed?[20]

It does not seem feasible that these questions have an immediate answer or a peaceful acceptance in legal scholarship. Legal solutions to these questions are hard not only because of the technological complexities but also due to the international and borderless characteristics of the cyberspace as a new digital environment.[21]

This does not mean that existing laws are useless and that legislators have to create an entire new system of property rules, however, old dogmas that have never been questioned before are in need of a re-thinking process. In van Erp words:

> *Property law is in need of a new paradigm, which reflects the hybrid world in which we live (...) A balance will have to be sought between stability and change,*

[14] Castillo Parilla, Bienes Digitales, 67.
[15] Castillo Parilla, Bienes Digitales, 71.
[16] Armstrong DLW GmbH v Winnington Networks Ltd,2012, EWHC 10 (Ch).
[17] Your Response Ltd v Databeam Media Ltd,2014 EWCA Civ 281.
[18] AA v Persons Unknown, 2019 EWHC Comm., 3556.
[19] BG Services – Societá a Responsabilitá Limitata, Sent. No 18/2019, Tribunale di Firenze, Sezione Fallimentare. Available at https://www.coinlex.it/wp-content/uploads/2019/01/Sentenza_Fallimento_Bitgrail.pdf
[20] Castillo Parilla, Bienes Digitales, 74.
[21] Castillo Parilla, Bienes Digitales, 13.

between when existing law can be preserved and when new creative solutions are needed.'[22]

Considering these facts, the purpose of this work is to solve one of the challenges posed by the digital revolution: is it possible to frame bitcoin and other cryptocurrencies within property law? If it is possible, how can it be done?

3 – Blockchain, Bitcoin and Cryptoassets framework

During this essay Bitcoin will be the main example of a cryptocurrency, although other cryptocurrencies will be mentioned with their particular differences.

Blockchain can be described as a combination of technologies with a fundamental function: to provide a distributed yet accurate record without a central administrator. Every node of the network holds a complete copy of the blockchain ensuring transparency, accuracy and decentralization.[23]

Blockchain´s first product appeared in 2008, with the publication of the Bitcoin whitepaper by the pseudonym Satoshi Nakamoto. Bitcoin blockchain was set into motion in January 2009. Its endeavor was to create an open-source electronic payment system that relied on cryptographic proof instead of trust[24] allowing two willing parties to transact with each other without a third party in the middle.[25] The system is completely decentralized with no involvement from traditional financial institutions and relies exclusively on system users who perform transactions.[26]

In this system, users can only "send" individual bitcoins to each other. These bitcoins are created through a verification process called 'mining' and the total minting is limited to 21 million bitcoins. Whenever a holder wishes to send an amount of bitcoin from one

---

[22] van Erp, Sjef. "Access Management of Digital Assets." European property law journal 8, no. 3, 2020 227–230.

[23] Werbach, Kevin. Trust but Verify: Why the Blockchain Needs the Law. Berkeley Technology Law Journal 33, no. 2, 2018. 487–550. https://www.jstor.org/stable/26533144.

[24] Kelvin FK Low; Ernie GS Teo. Bitcoins and Other Cryptocurrencies as Property. Law, Innovation and Technology 9, no. 2, 2017. 235-268.

[25] Satoshi Nakamoto. Bitcoin: a peer-to-peer electronic cash system. 2008. Available at https:/Ibitcoin.org/bitcoin.pdf.

[26] Murphy, E.V., Murphy, M.M., Seitzinger, M.V. Bitcoin, Congressional Questions, Answers, and Analysis of Legal Issues, 2015. Available at: https://sgp.fas.org/crs/misc/R43339.pdf

public address to another an instruction is sent to the network and computers on the network (nodes) validate the transactions before adding them to the distributed ledger.[27]

Therefore, every bitcoin holder is in possession of a public address and a private cryptographic key that are mathematically linked and the only way to transfer a bitcoin from one address to another is by using this private key. Although bitcoin is the most important cryptocurrency, it is not the only one and many cryptocurrencies share similar characteristics.

A first legal approximation would define cryptocurrencies as digital assets, such as electronic money or securities in dematerialized form. Cryptocurrencies are a unique category of digital assets based on cryptography that present several challenges to the existing property law institutions. They do not grant rights against an entity, thus, they do not represent a financial or obligational claim. They are an asset with intrinsic value per se and when created in a decentralized network, without a third party acting as a gatekeeper, they are out of reach for competent authorities to intervene.[28]

The revolutionary aspect of bitcoin in terms of property law is given by the fact that this particular digital asset is the entirety of the asset and not a mere representation.[29] Marc Andreessen[30] explained this perfectly:

> *The practical consequence of solving this problem is that Bitcoin gives us, for the first time, a way for one Internet user to transfer a unique piece of digital property to another Internet user, such that the transfer is guaranteed to be safe and secure, everyone knows that the transfer has taken place, and nobody can challenge the legitimacy of the transfer. The consequences of this breakthrough are hard to overstate*.[31]

The crypto-coin is simply a string of data manifested as a readable sequence of characters generated by a transaction of the system. The data string "records a transactional output

---

[27] Kelvin FK Low; Ernie GS Teo, Bitcoins and Other Cryptocurrencies as Property Law.

[28] Chiara Zilioli. "Crypto-Assets: Legal Characterization and Challenges Under Private Law." European law review 45, no. 2, 2020, 251–266.

[29] Szilagyi, Katie. *A Bundle of Blockchains? Digitally Disrupting Property Law.* Cumberland law review 48, no. 1. 2017.

[30] General Partner at Andressen Horowitz, venture capital fund with $35B in assets under management. (https://a16z.com/about/)

[31] Marc Andreessen. *Why Bitcoin Matter.,* N.Y. TIMES, 2014. Last viewed on March 21st. Available at https://archive.nytimes.com/dealbook.nytimes.com/2014/01/21/why-bitcoin-matters/?_r-0

of value at the public key of the person who now has the power to transact with it by using his or her private key".[32] When we say Bob has 5 bitcoins, what we are actually saying is that Bob, as a holder of the output of a previous transaction now has the possibility to spend the coin, using it as an input for the next transaction.

The blockchain records every transaction of the system and gives every transaction a unique identifier that allows to connect the most recent transactional output with the respective transaction input consumed in its creation. Every coin has its own unique transactional record which goes back to the first output on the system when the coin was mined. [33]

This means that every coin has a unique identity, however, the concept of a 'bitcoin' is a notional entity, a convenient and easy way of imagining the value represented by the transactional output of a determined public key. This sometimes leads to confusion and to the belief that the coin actually is "transferred" from one public address to another, as if Bob gave $10 to Alice in her hand. What actually happens is that the coin Bob had is destroyed and it is replaced by another coin in Alice´s public address. The data strings at each public key are distinct.[34] As Patrick Murck illustrates a bitcoin:

> "Is like a bar of gold, and when I transfer it, I melt the bar down and then I form it into a gold coin, and then I melt the coin down and I re-form it into something else".[35]

This represents an additional challenge to property law, however, its similar to what happens with conventional bank payment systems. If Bob pays Alice $10 by bank transfer, the "transfer" consists of the extinction of the $10 debt owed by the bank to Bob and the creation of a new debt owed by the bank to Alice. Nothing is transferred directly from Bob to Alice.

The existence of true digital assets challenges the roots of property law and legal scholars argue whether digital assets such as bitcoins are to be treated as currency or if is more

---

[32] Fox, David, and Sarah Green. Cryptocurrencies in Public and Private Law. First Edition. Oxford: Oxford University Press, 2019, 143.
[33] Fox and Green, Cryptocurrencies in Public and Private Law, 165.
[34] Fox and Green, Cryptocurrencies in Public and Private Law, 144.

[35] Patrick Murck. *Property Law and the Blockchain with Berkman Fellow, PatrickMurck.* Berkman Klein Ctr. For internet and Society, HARVARD. 2015. Available at https://cyber.harvard.edulevents/luncheon/2015/10/Murck.

appropriated to view it in property terms.[36] The following sections will intend to shed some light on the matter from both Civil and Common Law system perspectives.

4 – How to deal with cryptoassets

4.1. – Cryptoassets as money

Firstly, the analysis begins with the question of whether Bitcoin can be considered a new form of money. If classified as money, courts would apply the same regime as if they were legal currencies, avoiding problems of evaluating cryptocurrencies as an object of property law.[37] However, for cryptocurrencies to be classified as money they must fulfill three fundamental conditions: (i) to function as a medium of exchange, (ii) as a store of value and (iii) as a unit of account.

Although cryptocurrencies are clearly a medium of exchange, they do not meet the criteria, at least for now, of being a store of value and a unit of account. [38]

Money, surprisingly, "lacks a clear and consistent definition at law"[39], consequently, current legal systems normally accept money as different assets which do not strictly comply with the definition of money given by those States, as it happens for example with bank money.

The determination of whether an asset should be considered money or not has been explained by two theories: state theory and societary theory.

Under state theory, the issuance of physical money is the exclusive prerogative of the issuing State and the issued money is expressed in the national unit of account, even if its electronic or in the context of monetary unions[40]. The monetary system is a State monopoly and States can determine rate policies at its discretion, thus, cost of credit and the amount of money issued and accepted.

Under Societary theory, anything that is generally accepted by the community as a medium of exchange must be regarded as money, the recognition depends on the social

[36] Szilagyi, A Bundle of Blockchains?
[37] Szilagyi, A Bundle of Blockchains?
[38] Fox and Green, Cryptocurrencies in Public and Private Law, 14.
[39] Szilagyi, A Bundle of Blockchains?
[40] Fox and Green, Cryptocurrencies in Public and Private Law, 34.

usage and is not dependent upon state recognition. However, from a legal perspective, this theory lacks clarity and certainty. [41]

Cryptocurrencies do not constitute money within either of these theories. Within State theory, they are not created and controlled by any State and within the Societary theory, they do not reach important levels of general acceptance in any community yet, not even in El Salvador, which accepted Bitcoin as a legal currency.[42]

This situation does not impede the use of cryptocurrencies as a valid alternative of money, without being formally money, in certain cases. However, if Bitcoin were to cover a significant amount of the world´s commerce it would have many stability problems because of how the system works. One solution is to adopt a secondary layer such as Lightning Network, which aims to solve the problem of Bitcoin scalability by using micropayment channels to conduct transactions more efficiently.[43]

Although the analysis of Lightning Network exceeds the purpose of this work, it shows how cryptocurrencies are already a medium an exchange and an efficient alternative for money under some circumstances.

The European Central Bank went in this direction when defining virtual currencies, stating that virtual currencies are:

> *"a digital representation of value, not issued by a central bank, a credit institution or e-money institution, which in some circumstances can be used as an alternative to money".*[44]

If cryptocurrencies are to be conceived as an 'object' of property law, they are undeniably intangibles. As intangibles, they must not be confused with incorporeal forms of money such as bank money. Bank money is an intangible which represents a debt claim and it is always expressed as a form of fiat currency, where the bank is always the debtor with whom the customer has a bank account contract. In Bitcoin, not only is there no third-party acting as a middleman but also there is no debt to be claimed to anyone in any fiat currency.

Bitcoin and other cryptocurrencies are therefore excluded from the categorization as money and their legal nature is better explained in property law terms. Stable coins,

[41] Fox and Green, Cryptocurrencies in Public and Private Law, 37.
[42] Fox and Green, Cryptocurrencies in Public and Private Law, 36.

[43] *The Bitcoin Lightning Network whitepaper*. https://lightning.network/lightning-network-paper.pdf
[44] *Virtual currency schemes – a further analysis*. European Central Bank.
https://www.ecb.europa.eu/pub/pdf/other/virtualcurrencyschemesen.pdf

normally attached to the value of a fiat currency, such as the US dollar, are a special category of cryptocurrencies which deserve a different analysis, and they act similar to Bank Money most of the times. They are normally issued by a company, and they can be redeemed for fiat currency[45], hence, they are closer to the realm of personal rights.

4.2. – Cryptoassets as objects of property law

Cryptoassets are a challenge for traditional concepts of property law. They are true digital assets with no representation in the physical world, a bitcoin is the entirety of the asset and it has no external link to the physical world. Bitcoins are strings of data representing a transactional record of outputs at a user public key; thus, each bitcoin has a unique identity and a personalized record which can be tracked historically to its first transaction, the transaction of the "miner".

Finally, as explained above, the transfer system is special because the mechanism flows through the consumption and creation of distinct assets, similar to what happens with Bank Money transactions and debt extinctions.

Before delving into the specificities of common and civil law systems regarding property rights it is necessary to define some general concepts. Every legal system distinguishes between personal and property rights or between the law of obligations and the law of property. Law of obligations, particularly its subspecies contract law, regulates personal rights. Contractual rights concern legal relations between two or more parties and only bind the parties that have agreed to do so. The basic principle is known as Privity of Contract. The other area of law of obligations is constituted by tort law and legal relations are born, in this case, upon the occurrence of a factual situation. The relation is personal, and it only affects the person who caused the damage and its victim.[46]

On the other hand, under property law, legal relations are not only constituted between two or more persons, but also affect third parties in respect of an object. The distinctive signs of property rights are the immediate link between the right holder and the object and the possibility of the right holder to make effective his right erga omnes.

Furthermore, property law recognizes the Right to Follow enabling the owner of an object to act against a third party holding the owner's object. This is so because the entitlement of a property right is linked to the object and allows its holder to "act not only against the

---

[45] This is possible when they are collateralized by a fiat currency, as it happens with USDC or USDT.

[46] Akkermans, Numerus Clausus, 3.

person with whom he created the property right, but also against third parties interfering with his rights".[47] Property law resigns to the party autonomy of personal rights in order to have the third-party effect, also known as "erga omnes".

The power of a property right holder is characterized by its immediacy: there is a "direct" link or relation between the person and the "thing", contrary to what happens in personal rights, where the object of the right is a given conduct of another party, without any direct link with the object.

Digital assets have struggled to integrate into these categories. As explained above, property law has remained rather static throughout the years and the main reason is this powerful erga omnes effect and the fact that most countries adhere to a numerus clausus system. The numerus clausus refers to the idea that a system of property law imposes certain limitations on private parties that want to create property rights. In many legal systems, this translates to a closed list of property rights, thus, parties can only create property rights that fulfil the criteria set by legislation, with no freedom at all to shape the content of the legal relations.[48]

Additionally, property law was not structured taking into consideration digital assets, they are information based "objects" and open to all.[49]

Property law does not refer to a thing but to a legal relationship between a person and a thing, thus, is essential to determine whether digital assets, especially cryptocurrencies, are capable or not of being considered a "thing" under property law.

The determination of a legal "thing" and the determination of when the property right arises to that thing is a matter of law, not fact[50]. Professor Smith states that:

> *Property organizes this world into lumpy packages of legal relations – legal things – by setting boundaries around useful attributes that tend to be strong complements.*[51]

Therefore, property law identifies certain desirable features and describes the nexus of the features as a thing. This nexus is not necessarily a physical object; therefore, incorporeal objects are capable of being a "thing" under the scope of property law.[52]

[47] Akkermans, Numerus Clausus, 2.
[48] Akkermans, Numerus Clausus, 6.
[49] UK Law Commission, Number 256. Digital Assets: Consultation paper, 2022. Available at: https://www.lawcom.gov.uk/project/digital-assets/ .
[50] UK Law Commision, Digital Assets.
[51] H E Smith. Property as the Law of Things, Harvard Law Review 125, no 7, 2012, 1691-1726.
[52] Even in the German system incorporeal such as intellectual property are conceived as a special kind of property.

Common Law and Civil Law systems differ in the analysis of what objects of the world are capable of being protected by property rules, especially intangibles.

5 – Common Law: dealing with Digital Assets

Every legal system has its own implicit "ontology of what exists", meaning that they determine what exists for property law and the legal relation between the different things that are objects of property law. For doing so, property law systems distinguish between subjects of the law (persons), objects of the law (things) and legal positions between persons and things (rights).[53]

Common Law divides objects of the law, things, between "things real" and "things personal", where things real relate to land and include "incorporeal hereditaments", a vestige of the feudal system, and "things personal" which are a residual category known as personal property. "Things" under personal property are either a "chose in possession" or a "chose in action", and the law does not recognize any other category of property.[54]

An asset, in order to be considered as property, must have three essential requirements: (i) existence, (ii) liberty of a person to use the asset and (iii) the right of a person to either exclude or allow access by another person to the asset. If the asset complies with these conditions, it can attract property rights and the legal system will be applied, recognizing, protecting, and reinforcing the relations between the owner and the thing. If the object can be considered a "thing" under property law, rights can be asserted against the world.[55]

Although there is not a clear definition of what a 'thing' is, every system has guiding principles to determine when a thing can be the object of a property right. The common criteria used in the Common Law systems are the following:[56]

1. the Ainsworth criteria (National Provincial Bank v Ainsworth)
2. excludability
3. a rivalrous thing
4. separability

[53] J. G. Allen, Property in Digital Coins.
[54] J. G. Allen, Property in Digital Coins.
[55] UK Law Commission, Digital Assets.
[56] UK Law Commission, Digital Assets.

5. value

The Ainsworth criteria: Courts normally consider the characteristics of property set out by Lord Wilberforce: the object must be definable, identifiable by third parties, capable in its nature of assumption by third parties (transferability) and have some degree of permanence or stability. This criterion works as a negative threshold, thus, if an object does not satisfy the criteria, it will not attract property rights, however, it does not necessarily imply that the thing will attract property rights if the conditions are met.[57]

It is not clear what it exactly means that an '**object is definable**' but usually it is understood as the possibility to distinguish it from other similar items. The object must be identified or identifiable, there is no possibility to confer a floating entitlement to "all resources of the same generic type".[58]

Although similar, the criterion that a thing must be **identifiable by third parties** requires that third parties are factually able to notice the existence of the thing, whereas the concept of definability is related to the identity of the object itself. While definability refers to the possibility to identify a thing in a conceptual sense, the requirement that a thing be identifiable to third parties requires the thing is factually discoverable. This criterion is not easy to apply to intangibles, however, in the case of cryptocurrencies it is simple because blockchain acts as a public record which store every transaction.[59]

Transferability or assignability refers to the capacity of the thing of being transferred away from one owner to a another one. However legal scholars state that this requirement is not a definitive quality of a thing that can attract property rights: "transferability is the default position. Inalienability is exceptional".[60]

Rivalrousness refers to the idea that two parties cannot have the same thing at the same time. Contrary, if a party is using a resource and it does not affect the ability of another to make use, then we are in presence of a non-rivalrous resource. Normally information is a notorious example of a non-rivalrous resource because it has no inherent limit on its capacity to be used by different persons at the same time.[61]

[57] UK Law Commission, Digital Assets.
[58] Fox and Green, Cryptocurrencies in Public and Private Law, 146.
[59] UK Law Commission, Digital Assets.
[60] UK Law Commission, Digital Assets.
[61] UK Law Commission, Digital Assets.

Cryptocurrencies and bitcoin are unusual in this sense because the concept of rivalrous intangible property has not previously been considered at law or in legal theory. Bitcoin is intangible information, but at the same time it is rivalrous, any bitcoin held by a user is a fraction of the 21 million total bitcoins and no two users of the system are holding the same bitcoin simultaneously. [62]

Another key element that constitutes the core of a "thing" protected by property law is the ability to **exclude or permit access to others**, the owner must have the possibility to protect the object against unauthorized interference or use by others.[63]

Legal systems generally require that objects must be **separated** from their owner, the thing must be independent of the person: 'what distinguishes a property right is not just that they are only contingently ours, but that they might just as well be someone else´s'.[64]

Finally, Common Law scholars do not agree on whether a thing must have economic value in order to attract property rights, some believe that it is a relevant key indicator while others state that value is not a true indicia of property rights.[65]

All these guiding principles can be perfectly applicable to bitcoin; therefore, bitcoin must be considered an intangible thing capable of attracting property rights. The complexity arises because it does not fall into either of the categories of personal property defined in the leading case Colonial Bank v Whinney. In this case it was defined that personal property was either a chose in possession or a chose in action and, in private law, no intermediate category exists to cover other forms of intangibles.[66]

The court had to decide whether the shares in a public company were choses in action according to the Bankruptcy Act of 1883 and whether the shares were things themselves. Judge Fry LJ´s established a binary categorization[67], inspired in Sir William Blackstone´s Commentaries on the Laws of England:

> *"Property, in chattels personal, may be either in possession; which is where a man hath not only the right to enjoy, but hath the actual enjoyment of, the thing:*

---

[62] Szilagyi, A Bundle of Blockchains?
[63] Fox and Green, Cryptocurrencies in Public and Private Law, 59.
[64] Penner, James E. The Idea of Property in Law. Oxford: Oxford University Press, 2000, 112.
[65] UK Law Commission, Digital Assets.
[66] Fox and Green, Cryptocurrencies in Public and Private Law, 148-150 - The definition in criminal law may be wider. The Theft Act 1968 defines property for the purposes of theft as including things in action and other intangible property.
[67] Fox and Green, Cryptocurrencies in Public and Private Law, 151.

or else it is in action; where a man hath only a bare right, without any occupation or enjoyment.' [68]

In order to qualify as a chose in possession the thing must be tangible and capable of possession, therefore, assets must be movable and visible. They exist regardless of whether anyone lays claim to them. The prevailing view in English law was stated in OBG Ltd v Allam, stating that a chose in possession depends on a right to immediate possession of the subject matter of the claim, requiring physical control over a tangible thing.[69]

Choses in action have a broader meaning as a residual class of personal property, thus, a chose in action is any personal property that is not a thing in possession, such as debts or company shares. As intangibles, choses in action only exist if they can be enforced and recognized by a legal system·[70]

Bitcoin, however, does not fall into neither of these categories.[71] It is not a chose in possession because an intangible cannot be possessed in a traditional sense, and it is not a chose in action because there is no other party to enforce a personal obligation. Bank money, for example, can be enforced against a third party, however, an owner of a Bitcoin has no claim against anyone. So, in recent cases, Courts have had to decide whether a digital asset can be a thing under property law when it is neither a thing in possession nor a thing in action.[72]

Common Law is flexible enough to solve this problem rather than Civil Law and Courts have shown flexibility in this analysis granting property rights to things that do not fit in either category of personal property. However, they have not gone as far as to say that there is a third category of personal property.

In recent cases of EU carbon emission allowances, export quotas, waste management licenses and cryptocurrencies[73], courts have analyzed that there are intangible assets

---

[68] William Blackstone. Commentaries on the Laws of England. First published 1766, University of Chicago Press, 1979. Vol 2, 396–97, in Fox and Green, Cryptocurrencies in Public and Private Law, 151.

[69] Fox and Green, Cryptocurrencies in Public and Private Law, 149.
[70] UK Law Commission, Digital Assets.
[71] Other cryptocurrencies, such as Stablecoins, may classify as a chose in action.
[72] UK Law Commission, Digital Assets.
[73] UK Law Commission, Digital Assets.

which are not covered by the classical binary categorization of Colonial Bank v Whinney and due to their characteristics, they should be treated as personal property.

Digital assets are the future and in the following years there is going to be an important migration from physical to digital and this change is not limited to blockchain or cryptocurrencies.

5.1. Bitcoin as personal property

Digital assets which do not fit in current categories of personal property need to be recognized as objects protected by property law due to their influence in the society and their economic importance. To do so, there are three possible solutions: (i) to treat them as choses in possession, (ii) to treat them as choses in action or (iii) to create a third new category.

As Zellweger-Gutknecht suggests, with the introduction of distributed ledger technology, a *'a new class of data has emerged, which is both excludable and rivalrous nature'* and this data is called "value data". [74] Cryptocurrencies can be considered as a specific asset consisting of data.

The creation of a new third category seems to be the tendency in recent years influenced by David Fox and the UK Jurisdiction Taskforce's Legal statement which ended in the case of AA v Persons Unknown[75]. In this case the plaintiff claimed a proprietary injunction and/or a freezing injunction over bitcoins held on an intermediary exchange. Bryan J. concluded that bitcoins are neither choses in possession nor choses in action, but they meet all the criteria set in National v Ainsworth, therefore, they should be treated as property.

Another solution is proposed by Michael Bridge and consists in leaving the old categories of choses in possession and choses in action as subside categories and implementing a new distinction in "tangible and intangible personality". [76] In the category of "intangible

[74] Zellweger-Gutknecht, Regulatory Regime for Cryptocurrencies.

[75] Low, Kelvin F.K., Cryptoassets and the Renaissance of the Tertium Quid? (Chris Bevan (ed), Edward Elgar Handbook on Property Law and Theory (Forthcoming), 2023. Available at SSRN: https://ssrn.com/abstract=4382599 or http://dx.doi.org/10.2139/ssrn.4382599

[76] Michael Bridge, Personal Property Law, Fourth Edition. Oxford, 2015, 16.

personality" things are divided into corporeal objects which are reified rights and incorporeal objects which are not reified rights.[77]

The aim of this proposal is to incorporate hybrids, such as reified rights, while maintaining the classic distinction of rights and things, avoiding introducing a new category that contradicts the general approach of the legal system towards property law.[78]

However, Low criticizes the creation of a third category and propose a rationalization of the choses in action category. He claims that the recognition of cryptoassets as a third category of personal property 'has been made without reference to the scholarship from past centuries' and that the only obstacle to recognizing cryptoassets as things in action `was always selective amnesia'.[79]

5.2. Interim conclusion.

I have presented the fundamental challenges posed by digital assets, particularly cryptocurrencies, in the current Common Law legal landscape. I have explored their exclusion from the definition of money and proposed that the most optimal solution is to include them under the scope of Property Law. However, the inherent nature of incorporeal objects poses a problem to categorizing them under classical property law.

Given the distinctive features of bitcoin and other cryptocurrencies, I argue that they should be recognized as "things" entitled to property rights. To achieve this, Courts can either re-adapt the existing category of choses in action or devise a new one that addresses this emerging category of true digital assets that exist solely in cyberspace, with no representation in the physical world.

6 – Civil law and digital assets

6.1. Introduction. French and German systems.

[77] J. G. Allen, Property in Digital Coins.
[78] J. G. Allen, Property in Digital Coins.
[79] Low, Crpytoassets and the Renaissance of the Tertium Quid.

Civil law systems approach property law, also known as the 'law of things' differently compared to Common law systems. While each country holds its own unique property law system, they all share fundamental principles inspired in Roman Law.[80]
In civilian systems, property rights are considered real rights attached to a specific thing. The emphasis is primarily placed on the thing itself, without being influenced by common law notions of 'exigibility of rights that can be termed property rights'.[81]
There are two prominent systems of civilian property law: the German system, articulated in the Burgüergerliches Gesetzbuch (BGB) and the French system, documented in the *Code Civil*. The majority of civilian systems worldwide are based on either the BGB (E.g., Switzerland -Japan – Austria) or the French 'Napoleon' Code of 1804 (E.g., Spain, Italy or Argentina).
The primary distinction between these systems lies in the German BGB adherence to a much stricter separation between the law of property – Sachenrecht - and the law of obligations – Schuldrecht. According to Savigny 'property law should therefore be governed by its own rules in respect to objects, and it should not be subject to alterations made by the law of obligations'.[82]

Furthermore, another crucial distinction and the one that matters the most to this discussion, is that German property law only recognizes a 'Sache' (thing) as capable of ownership, and it must always be a corporeal thing. In contrast, the Code Civil does not have a definition of the 'things' that can be subject to a property but acknowledges the possibility of an incorporeal or intangible thing. These distinctions will be elaborated exhaustively in the following paragraphs.
Civil law property systems are based on the Roman concept of 'Dominium'. In Roman law, ownership -Dominium- was absolute and the actio vindicatio protected the owner against every potential claimant. [83] The Common law takes a different approach to ownership, as property rights are considered relative rather than absolute, and the reasoning is made in terms of title rather than in dominium.[84].

---

[80] The term 'Roman Law' is used during this work as a general term for the law of the Roman Republic, principate and Empire. For the period of rediscovery that came after, I will refer to the term 'learned Roman Law'.
[81] Fox, Green, Cryptocurrencies in Public and Private law, 182.
[82] Akkermans, Numerus Clausus in Europe,174.
[83] Akkermans, Numerus Clausus in Europe, 48.
[84] Graziadei, Michele, and Lionel D. Smith. Comparative Property Law: Global Perspectives. Cheltenham, UK: Edward Elgar Publishing, 2017,

Before diving in the analysis on whether cryptoassets are subject to property law or not, it is necessary to clarify the terminology used. In Civil Law systems the terms ‘chose’ (thing/cose/sache), ‘bien’ (good/beni/gut) and ‘objet’ (object/oggeto/gegenstand) are often used interchangeably and confused. While some scholars recognize that some civil codes provide different definitions for them[85], this essay does not aim to establish a theory of the ‘things’ or ‘biens’, but to know if cryptoassets can be treated as property and how to do so. Nevertheless, for the purposes of this chapter, the terms ‘chose’ and ‘bien’ will be used interchangeably with the English term ‘thing’.

This chapter aims to explore the suitability of cryptoassets, particularly bitcoin, within civil property law and how the most influential legal systems can define their legal nature. To achieve this, I will examine the French system and compare it with one of its major exponents: the Italian system. Finally, I will contrast it to the German system.

Within Civil Law systems, the differentiation between property rights and personal rights is a result of the historical development of property law[86], for this reason, in order to comprehensively evaluate the fundamental principles of civil property law it is essential to consider the historical and intellectual foundations provided by Roman Law.

6.2. Roman Law

6.2.1. General Principles

Roman law was structured around actions rather than rights; thus, they did not try to determine who had a certain right but rather who had an actio to protect a legal position. As Akkermans stated, ‘the question was not who was the owner, but who had an actio protecting ownership’.

---

[85] As Castillo Parrilla states in ‘Castillo Parilla, Bienes Digitales: una necesidad europea’, a “carefull reading through the Spanish and Itallian Civil Codes allows us to observe that the terms ‘bien’ and ‘cosa’ are used indistinctly, furthermore, it is also possible to substitute each of them for the term ‘objeto’. The author proposes a “teoría de los bienes’ in which the term ‘cosa’ is the genre and the term ‘bien’ a specie of the genre ‘cosa’. All the ‘bienes’ are ‘cosas’ but no all ‘cosas’ are ‘bienes’. A ‘bien’ is a ‘cosa’ with both legal and economy utility and relevance. That is the main difference. However, the author recognizes the confusion surrounding the terms showing that even there are contradiction within the same civil code, both in Spain and Italy and that is commonly accepted to use both terms indistinctly.
On the other side, there is also confusion with the term ‘objeto’. The expression is rather confusing, since it refers indistinctly to the object of the rights strictu sensu (or core of legal power that can be deployed by the holder of a right consisting of a bundle of powers at his disposal) and the object on which the rights fall, which will be an element of the physical reality, a passive recipient or center of imputation of the legal power that can be deployed by the holder of the right.

[86] Akkermans, Numerus Clausus, 78.

In this context, the distinction between personal and property law was established based on the question of which person could be subject to an *actio in rem*.
If the actio could be interposed against everyone, it was a property relation -*actio in rem*- whereas if the *actio* could only be claimed between the parties, the relation was personal.[87]
In pre-classical era of Roman Law[88] the initial classification of things of property law was based on the utility or value of the 'res' as well as the way they were transferred. The *res mancipi* were the most significant *res*, typically associated with agriculture and were transferred through a formal procedure, known as *mancipatio*[89]. On the other hand, the *res nec mancipi* had lesser economic importance and they could be transferred through *traditio*, an informal way to transfer ownership. Additionally, *res mancipi* were specifically enumerated in a closed list in Gaius Institutes, such as beasts of burden, lands, or slaves.[90]
However, with the advent of the *Corpus Iuris Civilis,* Justinian treated the terms *traditio* and *mancipatio* equally*,* thereby all things had the same transfer formalities. Nevertheless, the system of actions remained intact.

6.2.2. Concept and classification of res

A thing -res- is normally defined as every object of the external world over which rights may be vested. However, in a legal context, the concept of a *res* is confined to those things deemed worthy of protection under property to due to their social or economic utility.
There are several classifications of *res* in Roman Law but for the purpose of this study I will focus on Gaius's distinction of *res corporales* and *res incorporales.* According to Gaius *res corporales* are those which can be touched -quae tangi possunt- such as a estate[91], a slave or a dress and *res incorporales* are those which cannot be touched -*quae tangi non possunt*- basically rights, such as an usufruct, an obligation or a servitude.[92]
This notion of *res incorporales* should not be confused with the notion of 'incorporeal or intangible things used in modern systems. Gaius referred to *res incorporales* as

[87] Akkermans, Numerus Clausus, 23.
[88] Approximately from 250 BC to 200 AC.
[89] They could also be transferred with the procedure of in iure cessio.
[90] Akkermans, Numerus Clausus, 23.
[91] Estate as a piece of land, not as the civilian concept of patrimony.
[92] Iglesias, Derecho Romano: Historia e Instituciones. 19th Edition. Sello Editorial. 154-161.

patrimonial rights 'that existed merely *in iure* whereas today res incorporales are the objects of rights themselves'[93]

Notably, Gaius does not mention the property right as an incorporeal *res* because Roman law perceived ownership as being materialized in the thing. Hence, in Roman law, there is a certain degree of confusion or merging of the property right within the thing itself.[94]

6.2.3. The right of ownership

Although Roman Law did not explicitly provide a definition of ownership, the concept can be inferred through the notion of dominium, which represented the unitary, exclusive, perpetual, and sovereign right over a specific thing.[95] The term *Dominium* referred to the ultimate and absolute entitlement to an object above which there was no other.

The *actio vindicatio* was the most important property *actio* and it granted the right holder the right to persecute the thing object of property law against everyone. The claimant needed to prove that he had an entitlement over the disputed res.

Finally, according to Akkermans, Roman Law operated within a closed system of property rights, known as *numerus clausus*. This foundational principle of civil law property systems imposes limitation on the number and form of real rights. The author suggests that Romans had a *numerus clausus* system but with a twist, as it applied specifically to property actions rather than property rights.[96]

6.3. The French Code Civil and the Italian Codice Civile

6.3.1. Code Civil general principles

France was one of the first countries to draft a Civil Code in the year 1804 commonly referred to as the 'Napoleon Code'. This significant development connected with Napoleon's expansion policy positioned the French *Code Civil* as one of the most influential legal systems worldwide.[97] Consequently, numerous European countries and the majority of South American nations adopted Civil Codes following the French tradition.

---

[93] Graziadei, M. and Smith L.D., Comparative Property Law: Global Perspectives. Cheltenham, UK: Edward Elgar Publishing, 2017, 57-58.
[94] Grazidei and Smith, Comparative Property Law, 57
[95] Grazidei and Smith, Comparative Property Law, 54.
[96] Akkermans, Numerus Clausus, 55.
[97] Akkermans, Numerus Clausus, 83.

The French revolution tried to eliminate every possible tie with the feudal system, hence, the *Code Civil* abolished the previous fragmented ownership system and opted for a unitary and nearly absolute concept of ownership inspired by Roman Law.

Demolombe[98] defined real rights as those that establish an immediate relation between a person and a *chose[99]*. It can be argued that this definition is simplistic by a number of reasons: (i) it raises question regarding the legal definition and scope of a *chose,* (ii) it is necessary to define when a specific corporal reality of the world can be considered as a unique *chose* for the legal system and when as a bundle of *choses* ,(iii) it does not reflect the situation of legal systems which recognize the existence of incorporeal *choses* or *biens* and lastly (iv) because of the challenge raised by reified rights.[100]

The scope and the definition of a *chose* are one of the main differences between the French and the German systems. While the first recognizes intangibles as an object of property law, the latter restricts it to tangible and corporeal things. This distinction holds great importance when considering digital assets such as bitcoin as a potential thing capable of ownership.

The French legal system establishes a clear division between law of property and law of obligations, resulting therefore in a distinction between property rights and personal rights[101]. Property rights refer to the immediate power of control over a specific thing while personal rights relate to the right to a given performance from another individual.[102]

6.3.2. Codice Civile general principles

Following the *Code Civil* Italian property law system is also structured around the immediate relation between a person and a thing. It also maintains the separation between property law and the law of obligations, and the right of ownership is also unitary and can fall either in corporeal or incorporeal things.

General principles are shared between the systems. The only matter of debate could be the adhesion to the rule of *numerus clausus.* Legal scholars in France have not reached

[98] One of the principal exponents of the Classical Doctrine of real rights.

[99] Lorenzetti, Ricardo. Código Civil y Comercial de la Nación Comentado, Tomo IX, Editorial Rubinzal-Culzoni, 2015,12.

[100] Díez-Picazo, Luis. Fundamentos del derecho civil patrimonial III, 5ta Ed. Cizur Menor (Navarra): Thomson Reuters Civitas, 2009, 37.

[101] Similar to what happened with Roman Law, but with actions instead of rights.

[102] Akkermans, Numerus Clausus, 86.

an agreement on whether parties are free to create new property rights. According to Akkermans even in this scenario 'a rule of *numerus clausus* is therefore present in French law, although not as clearly and strictly as in other civil law systems.[103]

Legal scholarship in Italy had similar discussions in the past however the reform of the Civil Code of 1942 settled the argument and now doctrine is unanimous on the adhesion to the rule of *numerus clausus.*[104]

6.3.3. Code Civil Objects of Property Law

A real right consists in an immediate, direct, and nearly absolute relation between a person and a thing, independent of the actions of another party, therefore, the objects of these rights are the things of world. However, as mentioned above, defining a 'thing' in a legal sense poses certain challenges.

Not all 'things' of the external world are capable of being objects of property law and the list of items eligible for real rights have evolved over time.

Historically property law systems were structured around corporeal things as world economy was based on agricultural and material things. For years land was the most important form of wealth.[105] However, the transition from agricultural to industrial economy introduced tensions within property law since land was no longer the most valuable form of wealth[106]. Subsequently, the treatment of energy as an object of property law triggered numerous debates and similar discussions are now latent due to the digital revolution which caused a dematerialization of the economy and the rise of new digital assets.

As previously mentioned, civilian property systems are structured around the concept of a *chose,* however not all civil codes provide a specific definition of the term *chose* or *biens.* Moreover, they only devote a few articles to them, particularly to their classification.

The *Code Civil* does not provide definition of a *chose,* which is somewhat paradoxical considering that one of the cornerstone concepts of a legal system, the property right, lacks a proper definition.

[103] Akkermans, Numerus Clausus,168.
[104] Diez-Picazo, Revista Crítica de Derecho Inmobiliario, N 513, March 1976, 273.
[105] Akkermans, Numerus Clausus, 91.
[106] Grazidei and Smith, Comparative Property Law, 57.

The *Livre II* of the *Code Civil* (1804) addresses the classification of things and property law:

> <u>Article 516</u>*: Touts les biens sont meubles ou immeubles.*[107]
>
> <u>Article 527</u>*: Les biens sont meubles par leur nature ou par la determination de la loi.*
>
> <u>Article 544</u>*: La propriété est le droit de jouir et disposer des choses de la manière la plus absolue, pourvu qu'on n'en fasse pas un usage prohibé par les lois ou par les règlements.*

Upon reading these articles, one can discern the confusion in the usage of terms such as *biens* and *chose*. While no consensus has been reached, scholars explain that a *chose* refers to a thing in real life whereas a *bien* is a thing in law.[108] Therefore, according to this perspective, *choses* are the genus and *biens* are a species of the *chose* genus. However, as observed in article 544, legislators initially employ both terms interchangeably.

Secondly, the Code Civil does not provide a definition of a *chose* or *bien* but it categorizes all things into two groups: movables or immovables. The former is a residual category which captures all things that are not immovables.[109] This adds a layer of difficulty to the treatment of cryptoassets as a *chose* or *bien* since they do not fit comfortably into either category.

The distinction between movables and immovables holds significant importance within the French system, depending on whether a *bien* falls into one category or the other, the rules governing transfer systems and the creation of limited property rights differ greatly.[110] However, this *summa divisio* technique of differentiation of all things is not immune to criticism. While it makes sense in relation to tangible *biens*, it becomes nearly obsolete to explain intangible entities.[111]

---

[107] Code Civil: https://www.legifrance.gouv.fr/codes/texte_lc/LEGITEXT000006070721/2015-02-18/. This is an example of the confusion in the utilization of the terms chose and biens. While Art.516 talks about biens, Art. 544 defines the right of ownership as the right to use, enjoy and dispose a chose.

[108] Akkermans, Numerus Clausus, 90.

[109] Castillo Parilla, Bienes Digitales, 200.

[110] Akkermans, Numerus Clausus, 90.

[111] Pinto Hania, Les Biens Immateriels Saisis Par Le Droit des Suretes Reelles Mobilieres Conventionnelles, Doctoral Thesis, Université Paris-Est Creteil, 2011, 17.

Although the French property system unquestionably recognizes incorporeal things as objects of property rights it is surprising that the Code Civil does not mention incorporeal *biens* directly in any article until the 2006 reform. This reform modified Article 2355 stating that a pledge can be the assignment as security '*d'une obligation, d'un bien meuble incorporel ou d'un ensemble de biens meubles incorporels, présents ou futurs'*.[112]

Lastly, Art. 544 defines the right of ownership as the right to use, enjoy, and dispose a *chose* in the most complete manner. It can be concluded that the *Code Civil* does not define the term *chose or bien* and does not restrict it to corporeals as Article 90 of the German BGB does.

6.3.4. Codice Civile Objects of Property Law

Unlike the French Civil Code, the Italian *Codice Civile* provides a definition for the term *beni.* Although from the definition of art. 810 CC-IT it appears to be clear that the term *beni* is used as a species of the genus *cose,* both terms are used indistinctly. When discussing things, the Italian civil code states:

> Article 810: *Sono beni le cose che possono essere oggeto di diritti.*
>
> Article.814: *Si considerano beni mobili le energie natural che hanno valore económico.*
>
> Article 832: Il *proprietario ha diritto di godere e disporre delle cose in modo pieno ed esclusivo, entro i limiti e con l'osservanza degli obblighi stabiliti dall'ordinamento giuridico.*

This is one of the broadest and most flexible definitions among all European civil codes as it does not restrict the notion of thing only to property law but rather refers to objects of rights in general. Moreover, it does not restrict it to corporeal things as the German BGB does, thereby facilitates the recognition of incorporeal things as objects of rights.[113] The *Codice Civile* also distinguishes between *beni* movables and immovables, being the former a residual category. Surprisingly, Art. 814 above-mentioned considers energy as a movable as long as it has economic value. This approach differs from other European civil codes which typically exclude energy, especially electricity, not considering it a thing.[114]

---

[112] Code Civil. Art. 2355. – The legislator opted to classify them es incorporeal movables.
[113] Castillo Parilla, Bienes Digitales, 196.
[114] Castillo Parilla, Bienes Digitales, 200.

6.5. Ownership in French and Italian systems

French and Italian codes conceive ownership as the greatest possible interest in a thing. Drawing from the Roman notion of *dominium,* the right of ownership can be defined as the right to use, enjoy, and dispose a thing in the most absolute manner,[115] provided that one does not use it in a manner prohibited by law. This definition is identical in both Italian and French codes.[116]

Modern French legal scholarship, inspired in Roman Law, recognizes three elements of the right of ownership: (i) the right to use, also known as usus, (ii) the right to enjoy, particularly the fruits, known as fructus and (iii) the right of disposal, known as abusus. The latter includes the possibility to 'separate part of his ownership, corresponding to these three elements, to another person in the form of a property right other than ownership'.[117]

The right of ownership in civilian systems is absolute, exclusive, and perpetual contrary to the relativity of title of Common Law property systems.[118] It is absolute as a rejection to the feudal system granting unlimited powers to the owner within the boundaries of the law. It is considered an exclusive right because only the owner has the power to use, enjoy and dispone his ownership with an *erga omnes* effect. This exclusivity can be limited when the owner transfers to another person a property right other than ownership or when ownership is transferred limiting the full set of exclusive powers.

Lastly, it is perpetual because it lasts as long as the thing, object of the right, exists. In addition, ownership exists independently of whether the owner exercises his right to use, enjoy or dispose.[119]

6.6. Immaterial or incorporeal things under the French and Italian systems

Legal scholars often characterize immaterial things as realities that, lacking material existence and being a product or a creation of the human intellectual and human spirit, the legal system values as possible objects of rights. According to this definition,

[115] This definition can be criticized by being contradictory, as the first part indicates 'in the most absolute manner', hence, without any limitation, and the second part limits the right by reference to the law.
[116] Code Civil of France, Artcile 544 and Codice Civile of Italy, Article 832.
[117] Akkermans, Numerus Clausus, 93.
[118] Fox and Green, Cryptocurrencies in Public and Private Law, 191.
[119] Akkermans, Numerus Clausus , 95

immaterial things are creations of the law, hence, they only exist as a thing when the law recognizes it. As a result, there are certain restrictive criteria that need to be fulfilled in order to consider an intangible as the object of a right.[120]

The key distinguishing factor between immaterial/incorporeal[121] things and material/corporeal ones is tangibility, meaning the ability to be perceived by the human senses. However, tangibility must be defined in a legal sense rather than solely in a physical sense.[122]

Both French and Italian systems acknowledge the possibility of recognizing immaterial things, although they are often confused with rights, possibly due to their Roman heritage. Roman law did not make a clear distinction between immaterial things and rights, they just used the term *res corporales* in reference to a property right over a thing[123] and the term *res incorporales* in reference to real rights with respect to another person's thing or personal rights. [124]

According to Castán there are three possible approaches to the treatment of rights as immaterial things: (i) The German BGB § 90 position, which only considers corporeal things and treats incorporeals as rights over rights, (ii) the admission of incorporeal things limited to intellectual creations or trademarks and (iii) a traditional position, influenced by Roman Law, which recognizes rights as incorporeal things.[125]

Both French and Italian systems recognize that a specific right can be an immaterial thing, but this is not always the case. A right becomes an immaterial thing only when it becomes the object of a new legal relationship, such as right over a right. Therefore, the category of immaterial things includes both rights, in some cases, as well as entities that cannot be conceived physically, but intellectually. [126]

Immaterial things exist from the moment they are recognized as such by law, making them creations of the law[127], contrary to what occurs with material things that pre-exist the law. A bitcoin, in this context, is more akin to a material thing than an immaterial one.

[120] Diez-Picazo: Fundamentos del Derecho Civil Patrimonial, 186-187.

[121] According to Castillo Parilla something corporeal is something that has 'body' or consistence while something material is something that can be captured by the senses, thus, something corporeal is material but something material is not necessarily corporeal. The best example is electricity, that is material but incorporeal. BIENES DIGITALES: Una necesidad Europea,227.

[122] Castillo Parilla, Bienes Digitales, 227-228.

[123] As mentioned above, Roman law confused the property right with the thing itself.

[124] Castillo Parilla, Bienes Digitales, 229.

[125] Castán Tobeñas, José. Derecho civil español, común y foral. Tomo Primero. Introducción y parte general. Vol.2, 15ª Ed., 2007 in Castillo Parilla, Bienes Digitales, 231.

[126] Castillo Parilla, Bienes Digitales, 232.

[127] Diez-Picazo, Fundamentos del Derecho Civil Patrimonial,187.

The dematerialization of the economy has led to the creation of numerous immaterial assets that exist in a legal limbo, they are neither a right enforceable against another person, nor a thing protected by property law. Civilian systems which follow the French property paradigm do not conceive this new kind of asset as immaterial in the law. As is often the case with technological inventions, the law tends to be late, and the responsibility to deal with these uncertainties is left to the Courts.

The following categories are commonly considered immaterial things protected by law: (i) intellectual works protected by copyright law, such as literary, artistic o scientific works, (ii) industrial property inventions and designs and (iii) distinctive signs or emblems which identify or differentiate companies or products.[128] Each of these categories are fictions created by the law to protect non rivalrous resources, bitcoin, however, does not fit in any of these categories. It is rivalrous by design, and it has unique features of control that makes it more akin to corporeal things than to the traditional notion of immateriality.

Cryptocurrencies cannot be treated under the intellectual property regime because they fundamentally differ in nature. Intellectual property involves 'standing negative rights that allow their holder to prevent someone from doing something'[129], instead, cryptocurrencies function more like corporeal things, they are rivalrous, and they grant the person in control the possibility to use, enjoy or dispose them.

6.7. Bitcoin as an immaterial thing

One of the effects of the digital revolution is the creation of new technological entities that have economic value and are capable of being the object of different contracts that occur within the cyberspace.[130]

Civilian legal scholarship is not unanimous in the definition and the content of the category of intangibles and, as expressed above, they normally restrict it to intellectual property and rights.[131] However, Bitcoin is an odd novelty variety of incorporeal because

[128] Diez Picazo – Fundamentos del Derecho Civil Patrimonial, 187-188.
[129] Fox and Green, Cryptocurrencies in Public and Private Law, 189.
[130] Castillo Parrilla: Bienes digitales, 261.
[131] Not every right, just the rights over a different right.

it does not constitute a personal right[132] nor it is a standing negative right created by the law.

In order to define whether this new form of incorporeal thing can be object of property law, a functional analysis based on the characteristics of the thing is necessary. If a specific thing of the cyberspace, such as a bitcoin or another digital asset, reunites certain characteristics, then the legal system must recognize such a thing as a thing capable of being subject to ownership. A 'more modern view would instead focus on the characteristics of the object in question to determine whether it is a good fit for property law'.[133]

In order to be considered as an object being capable of ownership in French or Italian systems, a cryptoasset must: (i) be a thing (*chose/biens)* under the Civil Code, (ii) comply with the transparency and numerus clausus principles and (iii) have economic and legal value.

(i) A thing (*chose/biens) under the Civil Code*.

Immaterial things are recognized as a thing under both French and Italian systems, and they are normally circumscribed to intellectual property or rights, however, a bitcoin can be recognized as a thing under the prescriptions of both codes. In the Italian case the exercise is easier due to the openness of the definition of Art. 810 which defines a *beni* as a *cose* that can be the object of a specific right. Bitcoin can be considered a thing in cyberspace capable of being owned by a person, thus, it can be an object of a specific right. This line of reasoning was followed by the Court of Florence in Bitgrail Srl. Bankruptcy case: 'Cryptocurrencies may be considered property (*beni)* in accordance with Article 810 of the Italian Civil Code, over which rights may be claimed".[134]

French *Code Civil* does not define a *chose* but recognizes the possibility of property rights on incorporeal, hence, a Court could perfectly consider a bitcoin as an awkward form of movable due to their residual characteristic of the latter.

(ii) Transparency principle and numerus clausus

The transparency and *numerus clausus* principles are the basic principles of civilian property law. The *numerus clausus* refers to the limitation of private parties on the creation of new property rights 'leaving a limited freedom or no freedom at all to shape

[132] Fox and Green, Cyptocurrencies in Public and Private Law, 180
[133] Michels, Johan David, and Christopher Millard. "The New Things: Property Rights In Digital Files?" Cambridge law journal 81, no. 2, 2022, 323–355.
[134] BG Services – Societá a Responsabilitá Limitata, Sent. No 18/2019, Tribunale di Firenze, Sezione Fallimentare. Available at https://www.coinlex.it/wp-

the content of their property relations'.[135] To consider a bitcoin subject to ownership, as the Florence Court did, does not violate the numerus clausus principle because neither a new right is created, nor its content is modified by any party.

The transparency principle can be explained through the notions of specificity and publicity. Specificity is a principle concerned 'with the precise match between a property right holder and a particular object' and every civilian system conceives a form of this principle.[136] In this sense, a thing must be distinguishable and identifiable and must be independent from the owner. Additionally, third parties should be able to identify the existence of the thing and the owner should have the possibility to exclude or permit access.

Some scholars argue that a thing capable of being subject of ownership must be rivalrous because it does not make sense for a legal system to protect a thing that does not affect the ability of another person to have it too. On the other hand, some scholars sustain that intellectual property is a special type of property which creates a right of ownership on non-rivalrous information. As expressed above, this discussion does not affect the analysis on bitcoin because while it consists of intangible information, it is still rivalrous.

Publicity is a fundamental principle due to the *erga omnes* effect of property, therefore, real rights must be known by everybody. There are normally two ways of achieving publicity, through registration (normally used in relation to immovables and movables of great value) or through possession. The challenge of intangibles, such as bitcoins, is the impossibility to have a factual power of possession.

A possible solution to overcome this is the notion of 'control' proposed in the UNIDROIT Draft Principles on Digital Assets. The UNIDROIT proposal considers exclusive control as a functional equivalent to possession that 'involves only the dominion and power over a digital asset but does not involve the physical situs dimension applicable to possession of movables'[137]. If a system confers the ability to: (i) exclude others from 'obtaining substantially all of the benefit from the digital asset', (ii) obtain substantially all the benefits and (iii) transfer the abilities to another person, then a person has exclusive control.[138]

[135] Akkermans: Numerus Clausus, 37.
[136] Fox and Green: Cryptocurrencies in Public and Private Law, 187.
[137] Draft Unidroit Principles on Digital Assets and Private Law, Study LXXXII, 2023. Available at https://www.unidroit.org/wp-content/uploads/2023/01/Draft-Principles-and-Commentary-Public-Consultation.pdf
[138] Unidroit: Principles on Digital Assets, 2023.

(iii) Economic and legal value.

A thing has legal value, for property law, as long as it has economic value. While the definition might seem circular, it is possible to say that a thing has economic value whenever it has utility, independently if the utility can be monetizable or not. The economic value is objective and defined ex-ante and is independent from the subjective interest of a party.[139]

If cryptoassets, particularly bitcoin, can comply with all these requirements under a specific property law system, then they can be considered a thing capable of ownership. The Italian system already had a court ruling in this direction, probably since their system has a broad an open definition of a *beni.*

Another possibility would be to reform the Civil Code, as Liechtenstein did, in order to grant certainty in relation to digital assets. While some scholars would not be happy with this solution, it is surprising how legislators often create new things of property law out of thin air, without giving many explanations such as Article 2355 of the *Code Civil* or the German Electronic Securities Act.

Finally, Przemyslaw Palka proposes a tri partite scheme, incorporating a new category of res digitales. Palka's suggests that there should be a new different type of immaterial category that can be "embodied in either res corporales or res digitales, in either paper or digital documentation" and this will change their treatment and consequences under the rules of property law. [140]

7 – The german system

7.1. General principles

The German legal system, which is followed by countries such as Switzerland, Greece, Serbia and Japan, among others, stands as the second prominent civilian system. It is codified in the Bürgerliches Gesetzbuch, known as BGB, and has also been influenced by Roman Law.

[139] Castillo Parrilla: Bienes Digitales, 279-280.

[140] Przemyslaw Palka. Virtual property: towards a general theory. Phd Thesis, EUI Florence, 2017, 154. Available at www.cadmus.eui.eu/handle/1814/49664.

According to Savigny, the German system of private law is based on the grounds that 'Property law should therefore be governed by its own rules in respect to objects, and it should not be subject to alterations made by the law of obligations'. Therefore, the main difference with the French system is that BGB adheres to a much stricter separation between the law of obligations and property law.[141]

Similar to other civilian systems, property is structured around the notion of a thing, called Sache, however, the BGB does define the term Sache as a corporeal thing. Consequently, property rights are limited, in principle, to corporeal entities.

The notion of ownership is also absolute, perpetual and exclusive and it adheres to the rule of numerus clausus. One distinctive principle of German Law is the principle of abstraction, influenced by Savigny. German law makes a clear distinction between two different types of relations, those capable of creating obligations (Verpflichtungsgeschäte) and the relations that have the ability to transfer property rights (Verfügungsgeschäfte).[142]

7.2. Objects of property.

German BGB also distinguishes between movables and immovables resulting in the separation between the right on movables (Mobiliarsachenrecht) and the right on immovables (Immobiliarsachenrecht). It is also a *summa divisio* distinction in which movables are a residual category conformed by all things that are not immovables.

Section § 90 of the BGB provides a definition of a thing: 'the term object as it is used in this law can only be a corporeal object.' Hence, the concept of *Sache* is restricted to tangible objects. A tangible thing has physical existence occupying part of space and it is not applicable to anything which does not have a physical existence.[143]

Certain property rights different from ownership such as a pledge or an usufruct can rely on incorporeal objects.

7.3. The right of ownership

[141] Akkermans, Numerus Clausus in Europe, 175.

[142] Zanini, Leonardo Estevam de Assis. "Una visión general del derecho de las cosas en Alemania." Iuris Dictio, no. 30, 2022, 115–129,

[143] Oxford Digital Assets Project, English Translation of the Mt Gox Judgement of the Tokyo District Court, Edited by Hara, Mooney and Gullifer, 2019.

The BGB does not offer a legal definition of the right of ownership, however, the definition is formed through doctrine[144] and it can be conceived as the most comprehensive right a person can have in relation to a corporeal thing.

It is also a unitary conception of property, granting the owner an indivisible right that can be considered absolute, exclusive, and perpetual.[145] Section 903 of the BGB states:

> *§903: The owner of a thing may, to the extent that a statute or third-party rights does not conflict with this, deal with the thing at their discretion and exclude others from exercising any influence whatsoever.* (…)[146]

German law places emphasis on the powers of the owner rather than the content of the right[147], distinguishing it from the approach taken in the French and Italian laws. This notion has a dual dimension: a positive side that allows the owner to use, enjoy and dispose of the thing at its own will and a negative side which allows him to exclude others in relation to the thing.[148]

German law, unlike other civilian systems, allows someone to hold a limited property right over an object of their ownership, thus, a person can be both the owner and a holder of a limited property right simultaneously.[149]

7.4. Intangible/ Immaterials

The German system does not conceive the idea of immaterial/incorporeal things. This restriction of the notion of a thing can be attributed to Savigny, influenced by Kant, who understood possession as a factual situation incompatible with immaterial things and applicable only to corporeal things.[150]

The limitation outlined in section 90 of the BGB makes it impossible, in principle, to have a right of ownership over an intangible thing. According to Castán, German legal scholarship eliminated the category of incorporeal things and replaced it for the notion of rights over rights as an alternative to solve the challenges related to intangible things.[151]

---

[144] Zanini, Derechos de las Cosas.
[145] Akkermans, Numerus Clausus, 177.
[146] German Civil Code, Section 903. Available at https://www.gesetze-im-internet.de/englisch_bgb/. Last viewed on May 27th.
[147]Van Erp and Akkermans, Property Law, 217.
[148] Zanini, Derecho de las Cosas.
[149] Van Erp and Akkermans, Property Law, 214.
[150] Castillo Parilla, Bienes Digitales, 204.
[151] Castillo Parilla, Bienes Digitales, 230.

However, the recent reform of the Electronic Securities Act (Gesetz zur Einführung von elektronischen Wertpapiere, eWpG) has introduced a new category of electronic securities that can be object of ownership within the meaning of section 90 of the BGB.[152] The legislative solution was introduced to exploit the advantages of electronic securities retaining the traditional regulatory mechanics.[153] Extending this provision to include cryptoassets could be a potential solution for their treatment withing the system.

7.5. Bitcoin and German Property Law

Having settled the basic principles of German law and examining how the BGB handles objects eligible for ownership we can now assess whether it is possible to have a right in an intangible such as bitcoin. The legal nature of cryptoassets has not been clarified neither by case law or the legal German scholarship, such is the case, that the Conference of Ministers of Justice of Germany requested the North-Rhine Westphalia (Federführung nordrhein-Westfalens) workgroup on Blockchain to evaluate the legal nature of cryptoassets and determine whether a reform in the BGB was necessary for their proper regulation.

The workgroup report raises several key questions: (I) Can crypto tokens be regarded absolute rights? (ii) Can they be considered relative rights? (iii) Could they potentially fall under the scope of Section 823 as ‘other rights’? And finally, (iv) is a BGB reform necessary, following the example set by Liechtenstein?

First and foremost, the workgroup concluded that there is no need to grant absolute rights to cryptoassets due legislative gaps. Absolute rights are effective *erga omnes* and possess an exclusive nature. Since cryptoassets do not fall within the definition of things outlined in section 90 of the BGB and given their decentralized blockchain structure, they cannot be owned or possessed. Furthermore, they cannot be treated as intellectual property either. [154]

The workgroup also considered the possibility of an analogous application of property law, however, they concluded that there was no comparable situation for such analogy.[155]

---

[152] Gesley, Jenny. Germany: Electronic Securities Act Enters into Force. 2021. Web Page. https://www.loc.gov/item/global-legal-monitor/2021-06-29/germany-electronic-securities-act-enters-into-force/. Last viewed on May 27th.

[153] Workgroup of North-Rhine Westphalia: Need for a Legislative Action in Civil Law. Dealing with Crypto tokens. 2022. Available at https://www.justiz.nrw.de/JM/schwerpunkte/digitaler_neustart/index.php. Last viewed on May 15th.

[154] Workgroup of North-Rhine Westphalia report, 20.

[155] Workgroup of North-Rhine Westphalia report, 21.

In addition, the workgroup assessed that to have an absolute right it is crucial that the holder has power to exercise the right without being dependent on the cooperation of third parties. In the case of cryptoassets designed on a public blockchain, the holder is deemed to be subject to a relation of dependance to the system.[156] This dependency undermines the possibility of an absolute right.

Regarding the treatment of cryptoassets as relative rights, the workgroup also reached a negative conclusion. Relative rights do not have an effect *erga omnes* and are only enforceable in relation to specific individuals. Since there is no direct link or relationship between a cryptoasset holder and any particular legal entity, the existence of relative rights is impossible.[157]

Thirdly, the workgroup analyzed whether it was possible to conceive cryptoassets as 'other rights' according to Section 823 of the BGB:

> *Art. 823 Liability in Damages: (1) A person who, intentionally or negligently, unlawfully injures the life, limb, health, freedom, property, or some other right of another person is liable to provide compensation to the other party for the damage arising therefrom.*

The BGB does not have a definition of 'other rights' however the workgroup concluded that cryptoassets could not fall under this category because they lacked the necessary allocation atributes. A bitcoin, for example, grants no absolute right to the holder and lacks exclusivity, as is it based on the technical functioning of the blockchain.[158]

Finally, the workgroup concluded that the BGB does not require a reform with respect to property law because cryptoassets are a mere entry in a blockchain database to which no rights, especially absolute rights, exist. The workgroup adds that a token transfer in a blockchain is a mere factual act which can be adequately represented and protected by contract law.

A similar conclusion, excluding cryptoassets from property law, was reached in the Mt. Gox insolvency case in Japan. Japan, being a country, which follows the German BGB system of property law, allows for this comparison.

MtGox Co., Ltd was a stock company whose business was Information Technology that operated an online bitcoins exchange. This company, located in Tokyo, went bankrupt and one of the creditors filed a claim to recover the bitcoins held by the company relying

[156] Workgroup of North-Rhine Westphalia report, 24-25.
[157] Workgroup of North-Rhine Westphalia report, 25.
[158] Workgroup of North-Rhine Westphalia report, 28.

on the right of segregation provided by the Bankruptcy Act Article 62. The plaintiff argued that he had a right of ownership over 458,8812618 bitcoins, that the company had taken possession of them and that it should be segregated from the bankruptcy estate, hence, the plaintiff requested the court to grant permission to segregate the assets.[159]

The plaintiff claimed that a although the object of the right of ownership must be a tangible thing[160] the emphasis in this case should be on the characteristics of the object. According to their argument, if the object can be subject to exclusive control, it should be considered a tangible thing. The plaintiff added that a bitcoin has existence, and it is subject to exclusive control, therefore, it must be treated as a thing of property law. [161]

The defendant, on the other hand, sustained that ownership could only be possible in respect to a tangible thing with physical existence which occupies part of space, hence, it is not possible to exercise a right of segregation on a bitcoin because it does not meet the criteria of being a tangible thing, thus, it is not subject to any right of ownership.[162]

The Court ultimately ruled that for a thing to be capable of ownership, it must be tangible and the right holder has exclusive control over it.[163] Furthermore, in view of bitcoin functioning mechanism, they arrived to the conclusion that a person who manages a private key of a specific address does not have exclusive control of the remaining balance because the participation of a third party is required in order to carry out a transaction (a miner).[164]

Having considered the strict regulation of the BGB, the report of the *Federführung nordrhein-Westfalens* and the Mt Gox case, it is reasonable to conclude that civilian countries who structure their civil codes following the BGB would not recognize bitcoin and other cryptoassets as a thing capable of being subject to the right of ownership. However, Liechtenstein might be an exception to the rule.

On October 2019, Liechtenstein parliament approved the Tokens and TT Service Providers Act (TVTG)[165] which regulates civil law issues relating to cryptoassets. Article 1, Object and Purpose, states that the law will set the framework for all transactions systems based on Trustworthy Technology in terms of civil law through Tokens and their

[159] Oxford Digital Assets Project, Mt Gox..
[160] Identical conception of section 90 of the BGB.
[161] Oxford Digital Assets Project, Mt Gox.
[162] Oxford Digital Assets Project, Mt Gox.
[163] Oxford Digital Assets Project, Mt Gox.
[164] Oxford Digital Assets Project, Mt Gox.
[165] Available in German at: https://www.gesetze.li/konso/2019301000. Available in English at: https://www.lcx.com/wpcontent/uploads/2020_Liechtenstein_Blockcchain_Laws_Translation_English.pdf

transfer system with the aim to create an innovation-friendly and technology-neutral environment for Trustworthy Technology (TT).[166]

Article 2 defines a token as a piece of information on a TT system which: (i) can represent claims or rights against a person, rights to property or other absolute or relative rights and (ii) it is assigned to one or more TT identifiers. This article contradicts all of the previous analysis as it recognizes the possibility of ownership or other absolute or relative right in respect to intangible things such as bitcoins (tokens).

Additionally, Article 5 defines that the person holding the private key has the power of disposal over the token, thus, the right to dispose it and Article 6 defines disposal as: (i) the transfer of the right of disposal to the token or (ii) the justification of securities or a right of usufruct to a token.

In conclusion, the German property law system, articulated in the BGB, excludes the treatment of cryptoassets as a thing capable of being subject to the right of ownership. The strict interpretation of a *Sache* as a corporeal thing with physical existence which occupies a space in the external world is incompatible with the idea of ownership on intangible things such as bitcoin. Furthermore, an absolute or relative right is not possible. However, Liechtenstein, who has a property law system inspired by the BGB, made a reform of their Civil Code in a complete opposite way, making it possible to conceive ownership in an intangible asset as bitcoin.

This reflects the uniqueness of each property system and the facility that the lawmakers have to either limit or broaden the property law system without giving further explanations.

8 – Conclusion

Bitcoin and cryptoassets which share similar characteristics can be treated as objects of property law in both Common Law and Civil systems. Courts in England, Italy and New Zealand have arrived at the same conclusion in recent years.

I propose that the digital revolution has produced a new parallel environment, the cyberspace, that has its own unique characteristics, and it is a place where different people can transact with dematerialized objects with no physical existence. Bitcoin is one of

[166] Trustworth Technology (TT) is defined in Article 2.

these new digital objects which can be explained as a data string that records a transactional output and it has a rivalrous nature.
Consequently, in order to conceive a bitcoin as an object of property law it is necessary to make a functional analysis focused in the characteristics on the things rather than in the previous existing categories, however, I do not consider that the appearance of cryptocurrencies is disruptive enough to abandon the existing private law principles.
I argue that Common Law countries are probably best suited to conceive cryptoassets as personal property due to the flexibility of their system and the discussion will be set on whether a third category is needed or whether they can fit in a rationalized choses in action category.
Civil Law countries can also treat cryptocurrencies as an object of property law and the Civil Code of Liechtenstein, and the case of Bitgrail in Italy are recent examples.
The French and Italian systems and those modelled around them are already used to conceiving intangibles as objects of property law. However, the conception of intangibles was structured upon rights and intellectual property and do not consider them things per se.
German systems, on the other hand, restrict the notion of a thing to corporeal objects which occupy a space in the world, therefore, cryptoassets would not be capable of property protection in principle.
Courts, legislators, and lawyers need to accept that cyberspace and the dematerialization of the economy is already a reality and certainty is needed, not only in respect with cryptoassets. The reform of the existing law should be done with technology neutrality and not just focused on cryptoassets, otherwise it could be outdated in the following years.
The first step of the reform should address whether digital assets are things capable of being owned, and the followings steps should be focused on the second level rules of property such as possession, transferability, registration, and other property rights different than ownership.

9 - Bibliography

<u>Books and Academic Resources.</u>

- Akkermans, Bram, The principle of Numerus Clausus in European Property Law, Antwerp, Intersentia, 2008.
- Allen, J.G. Property in Digital Coins. European Property Law Journal (EPLJ), 2019. 8, no. 1: 64-101. https://doi.org/10.1515/eplj-2019-0005
- Bridge, Gullifer, McMeel, and Low, The Law of Personal Property, Sweet & Maxwell, 2021.
- Castán Tobeñas, José. Derecho civil español, común y foral. Tomo Primero. Introducción y parte general. Vol.2, 15ª Ed., 2007.
- Castillo Parrilla, J., Bienes digitales : una necesidad europea, Madrid, Spain: Dykinson, S.L., 2018.
- Díez-Picazo, Luis. Fundamentos del derecho civil patrimonial III, 5ta Ed. Cizur Menor (Navarra): Thomson Reuters Civitas, 2009.
- Diez-Picazo, Revista Crítica de Derecho Inmobiliario, N 513, March 1976.
- Erp, Stephan van, Alexandra Braun, and Bram Akkermans. Cases, Materials and Text on National, Supranational and International Property Law. Oxford: Hart, 2012.
- Fox, David, and Sarah Green. Cryptocurrencies in Public and Private Law. First Edition. Oxford: Oxford University Press, 2019.
- Graziadei, M. and Smith L.D., Comparative Property Law: Global Perspectives. Cheltenham, UK: Edward Elgar Publishing, 2017.
- Hirschl, Ran. “The Question of Case Selection in Comparative Constitutional Law.” The American journal of comparative law 53, no. 1, 2005, 125–155. https://doi.org/10.1093/ajcl/53.1.125

- Iglesias, Derecho Romano: Historia e Instituciones. 19th Edition. Sello Editorial. 154-161.
- Knell, Mark. "The Digital Revolution and Digitalized Network Society." Review of Evolutionary Political Economy 2, no. 1 202, 9-25. https://doi.org/10.1007/s43253-021-00037-4
- Lorenzetti, Ricardo. Código Civil y Comercial de la Nación Comentado, Tomo IX, Editorial Rubinzal-Culzoni, 2015.
- Low K. and Teo E. GS, Bitcoins and Other Cryptocurrencies as Property. Law, Innovation and Technology 9, no. 2, 2017, 235-268. Available at: https://doi.org/10.1080/17579961.2017.1377915
- Low, Kelvin F.K., Cryptoassets and the Renaissance of the Tertium Quid? Chris Bevan (ed), Edward Elgar Handbook on Property Law and Theory (Forthcoming), 2023. Available at SSRN: http://dx.doi.org/10.2139/ssrn.4382599
- Murphy, E.V., Murphy, M.M., Seitzinger, M.V. *Bitcoin, Congressional Questions, Answers, and Analysis of Legal Issues*, 2015. Available at: https://sgp.fas.org/crs/misc/R43339.pdf
- Penner, James E. *The Idea of Property in Law*. Oxford: Oxford University Press, 2000.
- Smith, H.E., *Property as the Law of Things*, Harvard Law Review, 2012, 1691-1693.
- Szilagyi, Katie. *A Bundle of Blockchains? Digitally Disrupting Property Law.* Cumberland law review 48, no. 1. 2017, 9-36. Available at:
- van Erp, Sjef. "Access Management of Digital Assets." European property law journal 8, no. 3, 2020, 227–230. https://doi.org/10.1515/eplj-2019-0013

- Werbach, Kevin. Trust but Verify: Why the Blockchain Needs the Law. Berkeley Technology Law Journal 33, no. 2, 2018, 487–550. https://www.jstor.org/stable/26533144
- William Blackstone. *Commentaries on the Laws of England*. First published 1766, University of Chicago Press, Vol 2, 1979, 396–97.
- Zanini, Leonardo Estevam de Assis. "Una visión general del derecho de las cosas en Alemania." Iuris Dictio, no. 30, 2022. Available at: https://doi.org/10.18272/iu.i30.2541
- Zellweger-Gutknecht, Corinne, Developing the Right Regulatory Regime for Cryptocurrencies and Other Value Data, 2018. Available at SSRN http://dx.doi.org/10.2139/ssrn.3240454
- Zilioli, Chiara, Crypto-Assets: Legal Characterisation and Challenges Under Private Law, European law review 45, no. 2, 2020, 251–266. or http://dx.doi.org/10.2139/ssrn.3240454
-

Reports

- UK Law Commision No 256, Digital Assets: consultation paper, 2022. Available at: https://www.lawcom.gov.uk/project/digital-assets/ .
- Work group of North-Rhine Westphalia: Need for a Legislative Action in Civil Law. Dealing with Crypto tokens. 2022. Available at: https://www.justiz.nrw.de/JM/schwerpunkte/digitaler_neustart/index.php.
- *Virtual currency schemes – a further analysis*, European Central Bank, 2015. Available at: https://www.ecb.europa.eu/pub/pdf/other/virtualcurrencyschemesen.pdf

Legislation and Soft Law

- French Civil Code.
- German Civil Code.
- Italian Civil Code.
- Liechtenstein Civil Code.

  Available in English at:

  https://www.lcx.com/wpcontent/uploads/2020_Liechtenstein_Blockcchain_Laws_Translation_English.pdf
- EwPg: Electronic Securities Act of Germany.
- Draft Unidroit Principles on Digital Assets and Private Law, Study LXXXII, 2023. Available at https://www.unidroit.org/wp-content/uploads/2023/01/Draft-Principles-and-Commentary-Public-Consultation.pdf

Case Law

England

- Armstrong DLW GmbH v Winnington Networks Ltd,2012, EWHC 10 (Ch).

  Available at: http://climatecasechart.com/wp-content/uploads/sites/16/non-us-case-documents/2012/20120111_2012-EWHC-10_decision.pdf
- Your Response Ltd v Datateam Media Ltd,2014 EWCA Civ 281.

  Available at: https://www.bailii.org/ew/cases/EWCA/Civ/2014/281.html
- AA v Persons Unknown, 2019 EWHC Comm., 3556.

  Available at: https://www.bailii.org/ew/cases/EWHC/Comm/2019/3556.html

Italy

- BG Services – Societá a Responsabilitá Limitata, Sent. No 18/2019, Tribunale di Firenze, Sezione Fallimentare.

  Available at: https://www.coinlex.it/wp-

Japan.

- Oxford Digital Assets Project, English Translation of the Mt Gox Judgement of the Tokyo District Court, Edited by Hara, Mooney and Gullifer, 2019. Available at: https://www.law.ox.ac.uk/sites/default/files/migrated/mtgox_judgment_final.pdf

Online Sources.

- Satoshi Nakamoto. Bitcoin: a peer-to-peer electronic cash system. 2008.

  Available at: https:/Ibitcoin.org/bitcoin.pdf
- CoinMarketCap. Last viewed on April 1st 2023 –

  Available at: https://coinmarketcap.com/
- Marc Andreessen. Why Bitcoin Matter., N.Y. TIMES, 2014.

  Available at: https://archive.nytimes.com/dealbook.nytimes.com/2014/01/21/why-bitcoin-matters/?_r-0
- The Bitcoin Lightning Network whitepaper.

  Available at: https://lightning.network/lightning-network-paper.pdf
- Gesley, Jenny. Germany: Electronic Securities Act Enters into Force. 2021.

  Available at: https://www.loc.gov/item/global-legal-monitor/2021-06-29/germany-electronic-securities-act-enters-into-force/
- Patrick Murck. Property Law and the Blockchain, Berkman Klein Ctr. For Interned and Society, Harvard, 2015.

  Available at: https://cyber.harvard.edulevents/luncheon/2015/10/Murck

PHD Thesis.

- Przemyslaw Palka. Virtual property: towards a general theory. Phd Thesis, EUI Florence, 2017.

  Available at: www.cadmus.eui.eu/handle/1814/49664

- Pinto Hania, Les Biens Immateriels Saisis Par Le Droit des Suretes Reelles Mobilieres Conventionnelles, Doctoral Thesis, Université Paris-Est Creteil, 2011.

  Available at: https://theses.hal.science/tel-00713275/document