İSTANBUL UNIVERSITY PRESS

Annales de la Faculte de Droit d'Istanbul

Annales de la Faculte de Droit d'Istanbul
Annales 2025, (77): 83–108

https://doi.org/10.26650/annales.2025.78.1641151

Submitted 17.02.2025
Published Online 10.11.2025

Research Article

Open Access

Corporeality and Fungibility in Roman Property Law: Reflections in Light of Non-Fungible Tokens (NFTs)

İpek Sevda Söğüt [1]

[1] Ozyegin University Faculty of Law, Department of Roman Law, İstanbul, Türkiye

Abstract This article reconsiders the concepts of corporeality and fungibility within Roman property law and assesses their continuing relevance for the classification of digital assets, with particular reference to non-fungible tokens (NFTs). While NFTs provide the stimulus for this inquiry, the central analysis focuses on Roman law's distinction between res fungibiles (fungible things) and res nec fungibiles (non-fungible things), as well as the broader implications of corporeality and identification in property classification. Drawing on classical Latin legal sources, this study examines how Roman jurists conceptualised materiality and interchangeability and how these notions shaped doctrines of possession, ownership, and contractual obligations. The discussion highlights that Roman distinctions between fungible and non-fungible goods, as well as between corporeal and incorporeal property, were not merely technical but carried significant legal consequences, insights that remain pertinent as modern legal systems grapple with the status of digital property. By situating NFTs within this historical framework, the article argues that Roman legal principles continue to provide a coherent theoretical foundation for addressing questions of ownership, transferability, and legal recognition in the digital age. Rather than offering definitive answers about digital ownership, the study proposes that the Roman concepts of fungibility and corporeality can enrich contemporary debates and guide the development of more consistent frameworks for emerging forms of property.

Keywords Roman Law · Property Law · Fungibility · Corporeality · Identification · Non-Fungible Tokens (NFTs)

Citation: Söğüt, İS, 'Corporeality and Fungibility in Roman Property Law: Reflections in Light of Non-Fungible Tokens (NFTs)' (2025) 77 Annales de la Faculte de Droit d'Istanbul 83. https://doi.org/10.26650/annales.2025.78.1641151

This work is licensed under Creative Commons Attribution-NonCommercial 4.0 International License.

© 2025. Söğüt, İ. S.

Corresponding author: İpek Sevda Söğüt ipek.sogut@ozyegin.edu.tr

I. Introduction

Non-fungible tokens can be used to give a digital art object (or an intangible copy of a real object) the status of an original copy. Block chains use two types of tokens: fungible ("exchangeable") and non-fungible ("non-exchangeable"). The first have been popular units of value for a long time, ever since assets have been traded on crypto markets, in particular, Bitcoin, Ripple or Ethereum. Second, NFTs are unique digital certificates. The main difference between fungible and non-fungible tokens is precisely in their uniqueness. Thus, the first type of token certifies the rights to a digital asset. One Ethereum is equivalent to another, for example, in the same way in which a share of a particular company is equal to another of the same shares from this organisation. The cost of the fungible tokens is the same. For example, one Bitcoin will be exchanged for another at the same exchange rate.[1] The term non-fungibility in this context should be understood as the inability to measure the value of NFTs against a stable value instrument; indeed, the equivalent of one NFT is not another NFT.[2] Each NFT is unique and cannot be substituted by any other token.[3]

As opposed to cryptocurrencies, NFTs correspond to or represent (parts of) goods that are unique due to their characteristics, such as (digital or physical) works of art, or even real estate. There are three main types of NFTs, based on how they relate to the digital or physical asset they represent. First, for certain NFTs, the work is uploaded to the blockchain; this, for example, can happen with code-generating art or vector art. This type of NFT is relatively rare due to the high costs of storing data on the blockchain. Second, other NFTs incorporate ownership rights, either by specifying them in the NFTs metadata or via a reference to external terms and conditions (such as on Mintable); in both cases, ownership can be transferred via blockchain transactions.[4] An NFT can also be defined as a blockchain-registered right to own a digital asset. From a technical perspective, a digital asset refers to the ownership of binary-coded data stored anywhere on our computer or in the cloud over the Internet.[5] The term "asset" could refer to an image, a video, a song, digital cards of a beloved basketball player, an encrypted virtual plot of land, or a virtual outfit designed for a character to wear while roaming a virtual space.[6] In short, digital assets may consist of text or images and grant usage rights to their owner.

NFTs can be thought of as digital assets representing real-world objects such as art, music, and materials used in online games and videos. These assets are bought and sold online, typically using cryptocurrency, and are coded using similar software found in many cryptos. NFTs offer new methods and processes for the

[1] Olga S. Kulakova, 'Digital Art in Light of NFT: Market Power and Legal Uncertainty' (2022) 3(2) *Digital Law Journal* 40.

[2] "Non-fungible" refers to assets or items that cannot be easily exchanged or intermingled with similar assets. Non-Fungible Tokens (NFTs) primarily define unique cryptoassets that are distinguished by their individual characteristics and cannot be replaced by another. Each NFT has a digital signature that prevents it from being equivalent to, or exchanged with, another NFT. The commonality between cryptocurrencies such as Bitcoin and NFTs lies in their reliance on blockchain infrastructure, which is created using encryption or cryptography. One of the fundamental differences between cryptocurrencies and NFTs is that an NFT cannot be entirely and directly exchanged for another asset in terms of identity, value, and/or utility. Each NFT consists of metadata that assigns it an identity, such as its size, the artist's name, and its limited availability. NFTs do not exist solely in the digital realm; they can also represent a physical asset and serve as digital twins of something found in the real world. For instance, the digital image of clothing or shoes can serve as an example of the digital twin concept. NFTs allow for the determination of the provenance of a digital asset by providing definitive answers to questions such as "Who is the owner of this digital asset?", "Who was its previous owner?", "Who is its creator?", and "How many original copies exist?" Sevgi Ayşe Öztürk, 'Yeni Bir Dijital Varlık Olarak NFT: Pazarlama Dünyasındaki Yeri Üzerine Değerlendirmeler" (2022) 22(4) *Anadolu Üniversitesi Sosyal Bilimler Dergisi* 1154.

[3] A critical point to emphasise here is that the non-fungibility of NFTs does not constitute an obstacle under Article 282 of the Turkish Code of Obligations, which pertains to contracts for the exchange of goods. Kardelen Filorinali, *Fikir ve Sanat Eserleri Hukuku Açısından NFT'ler* (Seçkin Yayınevi 2023) 32.

[4] NFTs are personal property, not contracts (despite the "smart contracts" popular nomenclature) or pure intellectual property licences (despite the currently governing law of digital assets such as e-books). Because transactions in NFTs are in the form of a sale, the law of sales of personal property should apply. Joshua A.T. Fairfield, 'Tokenized: The Law of Non-Fungible Tokens and Unique Digital Property" (2022) 97(4) *Indiana Law Journal* 1261.

[5] Alp Toygar, C.E. Tapie Rohm Jr. and Jake Zhu, 'A New Asset Type: Digital Assets" (2013) 22(4) *Journal of International Technology and Information Management* 113.

[6] Michael Dowling, 'Fertile LAND: Pricing Non-Fungible Tokens' (2022) 44 *Finance Research Letters* 2.

storage, placement, coding, and verification/authentication of digital content and assets. By preserving the provenance of the digital assets they represent, NFTs facilitate easier trading, exchange, identity verification, and transfer of these assets compared to previous systems.[7]

II. Ownership of NFTs in Property Law: A Comparative Examination

Although property law and the real rights that constitute its subject matter are often described as the "static, conservative, and immutable" branch of law due to their function of preserving the status quo, concepts such as property and ownership are in fact closely tied to prevailing social and economic understandings. Accordingly, the legal system determines which types of assets may be regarded as objects of property and what kinds of rights can be established over them in line with societal perceptions and practical needs. The legal notion of "property" does not necessarily coincide with the meaning attributed to it in everyday language, and different legal systems have adopted distinct conceptions of property. Under the Turkish Civil Code, however, the terms "thing", "asset", and "object" remain undefined and are often used interchangeably, leading to terminological uncertainty. Legal scholarship generally distinguishes these concepts while acknowledging their close relationship: a thing encompasses both tangible and intangible entities; an asset refers to those capable of serving as the object of legal rights; and an object denotes those that are materially perceptible and subject to direct human control.[8]

The concept of property is defined narrowly in legal systems influenced by the continental European tradition, while it is conceived more broadly in jurisdictions shaped by Anglo-Saxon law. For instance, according to §90 of the German Civil Code (BGB), property in the legal sense consists of corporeal objects. Similarly, Article 3:2 of the Dutch Civil Code defines property as corporeal objects that can be controlled by humans. These definitions adopt a restrictive approach to property and thereby limit the scope of assets that may be subject to ownership. Because digital assets are incorporeal in nature, they cannot be classified as property under this framework and no real right may be established over them.[9]

By contrast, legal systems that define property more broadly also interpret the notion of ownership in a wider sense. Section 285 of the Austrian Civil Code (ABGB) recognises as property everything that is distinct from persons and serves human use, while Section 353 provides that ownership extends to both corporeal and incorporeal property belonging to an individual. Within this framework, intangible digital assets may be regarded as property under the ABGB and can therefore form the subject of ownership. The French Civil Code likewise adopts a broad approach by treating as property anything capable of appropriation and having economic value, without drawing a distinction between tangible and intangible goods. A similar perspective is also reflected in English law within the Anglo-Saxon tradition. Under these approaches, intangible assets may be legally classified as property and thus constitute the object of real rights.[10]

Property is a broad concept that includes '*every intangible benefit and prerogative susceptible to possession or disposition.*' We apply a three-part test to determine whether a property right exists: 'First, there must be an interest capable of precise definition; second, it must be capable of exclusive possession or control; and third, the putative owner must have established a legitimate claim to exclusivity.[11] If a token is sold as property, treated by humans as property, and passed down through wills as property, the law will

[7] Kathleen Bridget Wilson, Adam Karg and Hadi Ghaderi, 'Prospecting Non-Fungible Tokens in the Digital Economy: Stakeholders and Ecosystem, Risk and Opportunity' (2022) 65(5) *Business Horizons* 657-658.

[8] Rabia Özkan Taş, *Dijital Varlıklar Üzerindeki Hakkın Hukuki Niteliği* (Oniki Levha Yayınevi 2025) 110.

[9] Özkan Taş (n 8) 111-112.

[10] Sanem Aksoy Dursun, *Eşya Kavramı* (Oniki Levha Yayınevi 2012) 14-17.

[11] Fairfield, (n 4) 1288, fn. 132.

begin to take it seriously as property.[12] According to a viewpoint in the doctrine,[13] NFTs should be treated as full personal property, that sales of NFTs should follow the law of sales of personal property, and the sooner those legal metaphors are firmly ensconced in case law, the sooner NFTs will reach their full potential as a way of satisfying the human need for digital rareness. On the other hand, currently, many commentators[14] unflinchingly conclude that possession does not apply to intangibles. Their fear is that "*intangible object[s] capable of physical possession*" would form an "*unstable category*" of property.[15]

According to German civil law, NFTs cannot be classified as property within the meaning of Section 90 of the German Civil Code (BGB) due to the lack of physicality of the purely digital tokens. Physical objects must be tangible and spatially definable. This criterion does not apply to digital tokens. Therefore, ownership of NFTs within the strict meaning of Section 903 of the German Civil Code is not possible.[16] The strict *numerus clausus* of property law normally also prohibits an analogous application to non-corporeal things. However, there is a discussion about an analogue application of Section 903 of the German Civil Code. Such a discussion is based on the argument that NFTs are not identical to data, which the German legislature actively decided not to include as a classification of property since data is easily replicable. NFTs are due to the blockchain technology much more similar to property since they are unique as a token and therefore can be allocated to a specific person (the owner) as well as exclude other persons from ownership. These arguments are similarly applicable when it comes to tort law. German tort law protects *inter alia* property but also so-called "similar rights". It is possible for NFTs to fall, due to their allocation and exclusion function, under

[12] There are no legal obstacles to classifying contracts related to digital products as lease agreements, contracts for work and services, licence agreements, or service contracts; it is not necessary for the digital product to have the nature of a "thing" (object) for the provisions of these contract types to be applicable. However, the provisions of Turkish Law concerning sales contracts should be evaluated separately. In the Turkish legal system, the subject of a sales contract consists of movable and immovable property (Turkish Code of Obligations, Art. 207 et seq.). According to the provision, "a sales contract is a contract in which the seller undertakes to transfer the possession and ownership of the sold item to the buyer, and the buyer undertakes to pay a price in return" (Turkish Code of Obligations, Art. 207/I). Furthermore, natural forces may also be the subject of a sales contract (Turkish Civil Code, Art. 762). The wording "... transfer the possession and ownership of the sold item ..." in the provision creates the impression that the subject of a sales contract must necessarily have the nature of a "thing". This characteristic is already attributed to natural forces by law (Turkish Civil Code, Art. 762). There is no legal obstacle to making receivables or limited real rights the subject of a sales contract. However, unlike German law, which contains a provision similar to § 453/I BGB stating that "the provisions on the sale of goods shall apply, mutatis mutandis, to the sale of rights and other objects," such a regulation does not exist in our legal system. Therefore, the inferences in the German doctrine regarding the applicability of sales contract provisions to digital products cannot easily be adopted in our legal system. Consequently, the initial impression from the perspective of Turkish law is that for the provisions of a sales contract to apply to digital products, these products must possess the characteristics of a "thing". The fact that a sales contract is a contract that gives rise to an obligation to transfer also initially supports this view. However, the concept of "the sold item" in Article 207 of the Turkish Code of Obligations is interpreted broadly in doctrine and court decisions; the concept of the sold goods encompasses not only movables or immovables but also all rights that have monetary value, even if they do not have a tangible form. In light of the fact that digital products also hold monetary value, we are of the opinion that the approach whereby they can be subject to sales contracts, just like other intangible assets with monetary value, would not conflict with either doctrine or court decisions. From this perspective, and based on the aforementioned reasoning, it is argued that it is not necessary to assign the nature of a "thing" to digital products for the purpose of classifying contract types. However, it should be noted that applying the provisions of currently available contract types to contracts concerning digital products will provide only a temporary solution, as such provisions will be applied only to the extent that they are appropriate to the nature of digital products. Justifications such as the obligations to update digital products, the possibility of personal data being considered as consideration, and the insufficiency of warranty provisions for defects when considering the structural characteristics of digital products highlight the necessity of introducing specific legal regulations for contracts related to digital products. Cannur Ercan and Gökhan Ünlen, 'Dijital Ürünlerin Eşya Niteliğine Disiplinlerarası Bir Bakış' (2024) 73(2) *Ankara Üniversitesi Hukuk Fakültesi Dergisi* 1182-1183.

[13] Fairfield (n 4) 1292-1293.

[14] Thomas W. Merrill, 'Ownership and Possession' in Yun Chien Chang (ed), *Law and Economics of Possession* (Cambridge University Press 2015) 9-25; Jason G. Allen, 'Property in Digital Coins' (2019) 8(1) *European Property Law Journal* 64-87; Joao Marinotti, 'Tangibility as Technology' (2021) 37(3) *Georgia State University Law Review* 671, 681-682, 682 fn. 59, 695-696, 703, 734. (Noting that although tangibility may facilitate our conceptualisation of "things" in property law, it is not a necessary criterion for legal thinghood, and by understanding tangibility's original purpose in property law, it is possible to see that certain crypto-assets such as Bitcoin may fulfil all requisites of legal thinghood). The limitation of possession to physical assets, however, is far from new. See, e.g., Friedrich Karl von Savigny, *Von Savigny's Treatise on Possession: Or the Jus Possessionis of the Civil Law* (6th edn, Hyperion Press 1979).

[15] Fairfield (n 4) 1289.

[16] The classification of digital products under the concept of "things" within the framework of the data storage-based approach is being challenged. Any attempt to derive the material quality of the structural data independently from a data storage medium will fail due to the lack of physical existence of such data in accordance with § 90 of the BGB. Therefore, under the current legal framework, the direct application of property law to the structural information layer of digital products is generally not possible. For more information on this matter, see. Armin Salehian, 'Digitale Produkte als Hybride Rechtsobjekte' in Beatrix Weber (ed), *Hofer Akademische Schriften zum Recht in Nachhaltigkeit, Compliance und IT*, vol 1 (Druck und Verlag 2023) 49-53.

similar rights according to Section 823 of the German Civil Code.[17] In the German Civil Code, provisions under Title 2a (Titel 2a), "Contracts on Digital Products (Verträge über digitale Produkte)" are stipulated in § 327 BGB et seq. Subtitle 1 (Untertitel 1) governs "Consumer Contracts on Digital Products (Verbraucherverträge über digitale Produkte)". The provisions of the Digital Content Directive have been incorporated into the German domestic law under the §327 BGB[18] et seq. of the German Civil Code, effective from 1 January 2022.[19] Consequently, as digital products, NFTs can be subject to legal transactions under the contracts related to them, in accordance with the stipulated regulations.

Under both the Swiss Civil Code, which served as the model for the Turkish Civil Code, and the Turkish Civil Code itself, the concept of the object is not explicitly defined; its scope and nature have been left to judicial interpretation and legal scholarship. Nevertheless, certain provisions of the Turkish Civil Code (Arts. 684-687, 704, 762) indicate that, in principle, the Code regards only corporeal goods as property. From a comparative perspective, it can therefore be argued that the Turkish Civil Code adopts a narrow approach to the definition of property.[20]

In Turkish legal scholarship, several elements have been identified in order to determine what constitutes an object in the legal sense, and on this basis a definition has been developed. Accordingly, an object is defined as a corporeal entity that is capable of being subject to control and has clearly identifiable boundaries. In other words, in order to qualify as an object in the legal sense, the following criteria must be satisfied: (1) the existence of a material form, (2) clearly defined boundaries, (3) susceptibility to human control, and (4) existence outside the person. Within this framework, it has traditionally been argued that digital assets, due to their incorporeal nature, cannot be regarded as objects and therefore cannot constitute the subject matter of real rights.[21]

Nevertheless, the classification of digital assets as objects requires a separate assessment of each of these elements, which is essential for the broader debate on whether they may serve as the subject of real rights. Some scholars argue that the principal distinction between digital assets and objects lies in the different ways in which they come into existence, and that the conventional dichotomy between tangible and intangible goods should be transcended. From this perspective, the absolute rights traditionally recognised over objects could also be extended to digital assets. Achieving this outcome, however, would require the legal definition, scope, and attributes of the concept of the object to be interpreted broadly so as to encompass digital assets.[22]

It should further be emphasised that, although beyond the scope of this study, there is ongoing scholarly debate[23] as to whether the concept of "digital content/products" may be regarded as a new category

[17] Katharina Garbers-von Boehm, Helena Haag and Katharina Gruber, *Intellectual Property Rights and Distributed Ledger Technology with a Focus on Art NFTs and Tokenized Physical Artworks*, The European Parliament's Policy Department for Citizens' Rights and Constitutional Affairs, Committee on Civil Legal Affairs (JURI), (European Union 2022), 22-23; Marcus Kaulartz and Alexander Schmid, 'Rechtliche Aspekte sogenannter Non-Fungible Tokens (NFTs)' *Compliance-Berater* 8 (Deutscher Fachverlag GmbH 2021) 298-300.

[18] For detailed information on the changes in the BGB regarding this matter, see: Marcus Artz, 'Viel Neues im BGB-Verträge über digitale Produkte und neues Kaufrecht' (2022) *Zeitschrift für das Juristische Studium* http://www.zjs-online.com accessed 3 February 2025.

[19] Ercan and Ünlen (n 12) 1147, fn 21.

[20] Aksoy Dursun (n 10) 21-23.

[21] Aksoy Dursun (n 10) 21-23.

[22] Özkan Taş (n 8) 113-114.

[23] For a critical discussion regarding whether the concept of "digital content" may be viewed as a new category alongside traditional legal objects such as things, (intangible) goods, or rights, which are capable of being subject to legal ownership and control under classical legal dogmatics, see: Matthias Wendland, 'Sonderprivatrecht für digitale Güter' (2019) 118 Zeitschrift für Vergleichende Rechtswissenschaft 191-230. For detailed information, see, Michael Grunberger, 'Verträge über digitale Güter' (2018) 218(2) *Archiv für die civilistische Praxis* 231; Martin Schmidt-Kessel, 'Verträge über digitale Inhalte – Einordnung und Verbraucherschutz' (2014) (7-8) *Kommunikation & Recht* 475-488.

alongside traditional legal objects, such as things, (intangible) goods, or rights, which are capable of being subject to legal ownership and control under classical legal dogmatics.[24]

III. Between Digital Assets and Legal Traditions: Fungibility and Corporeality in Transition

All entities over which rights may be established are classified as assets, and two principal categories of assets are recognised: corporeal (*res corporales*) and incorporeal (*res incorporales*). Real rights, as well as intellectual and industrial property rights, regulate the use, enjoyment, and legal disposition of such assets while ensuring the absolute protection of the holder's interests in relation to them. Both types of rights share a fundamental characteristic: the necessary existence of a right holder and an object of the right, coupled with the capacity to assert the right *erga omnes*. This feature distinguishes absolute rights over assets from rights arising within contractual relationships. In this case, the mutual will of the contracting parties determines the fate of the right's subject matter. By contrast, in the case of absolute rights, the powers of the right holder over the object arise directly and independently, without requiring the intervention of any other person.[25]

The view that digital assets may constitute the subject matter of real rights essentially seeks to extend to digital assets the notion of direct control over objects, which forms the core of real rights. However, the incorporeal nature of digital assets prevents their legal classification as objects of property and instead places them within the category of intangible assets subject to the protection of intellectual property law. Legislative provisions concerning domain names and computer programmes represent examples of this

[24] The provisions in § 327 BGB and subsequent articles cover almost all goods and services that the digital world offers to society. The concept of digital content (and digital services) has been an integral part of European legislative initiatives for approximately twenty years, undergoing continuous development and integration both at the EU level and within member states. The examination of the two components of digital products have revealed that the common core concept of digital content and digital services is digital data. The concept of digital products is not yet fully matured, which poses challenges for legal practitioners in distinguishing between these variants. To ensure a high level of legal certainty at both the European and national levels, precise and binding criteria for differentiating between digital content and digital services should be developed through legislative measures or judicial decisions. The lack of distinction between digital content and digital services, particularly in norms such as § 327(5) and § 356(5) BGB, leads to practical difficulties in legal practice and advisory services. Shortly after the codification of the BGB, various theories regarding the definition of the concept of "legal object" emerged. The determination of this concept primarily refers to absolute rights (formal approach), transferable rights (disposability approach), and controllable property assets (material approach). The key to the classification of digital products within the legal objects system lies in dividing digital products into three main dimensions or layers. The structural layer of digital products plays a significant role in their actual and technical existence, storage, concrete consumption and playback possibilities, and their transfer. The structural information layer of digital products does not meet the requirements of the concept of a "thing" as defined in § 90 BGB. Neither the carrier-based approach of the BGH (Bundesgerichtshof) nor the approaches advocated in the literature, which attempt to attribute materiality to the structural information layer of digital products independently of the data carrier, have been convincing, and these approaches have been refuted. Consequently, the regulatory regime of property law cannot be applied directly or analogously to the structural information layer of digital products, as these elements lack materiality and comparability. The right of disposal over data, originally developed for criminal law, is based on the technical author of the act of recording the data and can also be applied as a subjective right in private law classifications. Unlike traditional property rights, such as the right of ownership, the right of disposal over data is structured within a much more limited scope and, therefore, cannot be classified as an absolute subjective right. The sole material right related to the structural information layer of digital products, the right of disposal over data, cannot be transferred through legal transactions and, thus, cannot be classified under the various theories concerning legal objects. The classification of the structural information layer of digital products under the category of "other objects" in § 453(1) BGB does not present new findings for the current inquiry. This norm primarily aims to make defect warranty rights applicable to intangible objects, and no legislative classification decision is associated with it. The question of classifying digital products within the legal objects system depends on which of the three information layers of digital products is being considered, leading to different outcomes. The semantic information layer of digital products, that is, the information embodied in the data, can be classified as a legal object in the form of intellectual property rights, provided the relevant copyright norms are met. On the other hand, the syntactic information layer of digital products cannot be classified within the legal objects system under the current legal framework (*de lege lata*). The debate on granting property rights over the syntactic layer of data is the subject of an extensive and multifaceted discussion. However, efforts in this direction have not yet reached a common consensus, which is partly due to the legal uncertainties that would arise from the introduction of such a right. The structural information layer of digital products can be classified as part of the ownership rights of the data carrier according to the BGH case law. However, beyond this situation, the structural information layer of digital products cannot be classified as a legal object. The attribution of new goods, typically derived from previously unavailable technologies, to the private legal order continually raises the question of whether such attributions should be made by legislative or judicial means. The current legal framework does not recognise the structural information layer of digital products as a material object, regardless of whether it is stored on a data carrier. However, the recognition and definition of an object by the legal order could lift the structural information layer of digital products out of the infinite range of possible phenomena and classify it as a legal object; this has not yet occurred. Salehian (n 16) 75-79.

[25] Özkan Taş (n 8) 124.

approach as reflected in the positive law. In substance, the interests protected under intellectual property rights and those associated with digital assets share only the characteristic of incorporeality.[26]

Corporeality has long been regarded as an essential attribute of an object, signifying its tangible, three-dimensional existence in the physical world. Digital assets, by contrast, lack material substance and are therefore by their very nature incorporeal. This incorporeal character raises the question of whether they should be classified as intangible rights or intangible assets, yet current law provides no definitive guidance on their proper categorisation. A central manifestation of corporeality in property law is determinacy, which refers to an asset's ability to constitute a distinct and identifiable entity through clear demarcation of its boundaries, thereby enabling it to be distinguished from others and subjected to rights. Traditionally, this requirement has been linked to both material and economic unity, serving not only to ensure individualisation but also to secure the publicity of rights established over the asset. While one might argue that determinacy can only be predicated on tangible objects, comparative scholarship, particularly in the Swiss tradition, suggests that determinacy is not confined to physical demarcation but may also be achieved through functional distinctiveness.[27]

This reconceptualization brings determinacy into close connection with fungibility. Fungible goods are interchangeable and defined by quantity, weight, or measure, whereas non-fungible goods are unique and individualised. In this sense, determinacy does not derive exclusively from physical boundaries but also from whether an asset can be functionally distinguished and treated as unique. Digital assets, despite their incorporeal nature, may satisfy this condition: blockchain technology, for example, enables their identification, individualisation, and differentiation from other assets. Thus, the concepts of corporeality and fungibility intersect in ways that challenge the classical notion that only tangible things can be individualised, opening the door for digital assets to be considered as potential objects of property law within an evolving digital economy.[28]

In this respect, the debate echoes the categories established in Roman law, where the distinction between *res corporales* and *res incorporales*, as well as between *res fungibiles* and *res nec fungibiles*, provided the foundational framework for understanding how materiality and interchangeability determine the scope of property and real rights, principles that remain highly relevant in assessing the legal status of digital assets today.

A non-fungible token (NFT) is defined as a unique and irreplacable entry within a cryptographic blockchain ledger. It serves as a reference to the metadata of a specific digital item on the Internet and represents the latest enigmatic development emerging from the intricate domain of financial technology.[29] The idea of fungibility, however, and thus, the notion of non-fungibility has a very ancient origin. The Roman system of private law distinguished between *res fungibiles* and *res nec fungibiles*. *Res fungibiles* translates to fungible (interchangeable) things, while *res nec fungibiles* translates to the very opposite, that is, items that are not interchangeable.[30] Fungibles were "*those things that are estimated by weight, number, or measure, for instance, wine, oil, corn, coined money, copper, silver, or gold*" (Inst. 3.14 pr.). Non-fungible things were those identified and valued in and for themselves: e.g., a particular horse or piece of land or slave. The difference had legal relevance with respect to some legal relations, and specifically when it came to rules

[26] Özkan Taş (n 8) 125.

[27] Numan Tekelioğlu, 'Eşya Kavramını Yeniden Düşünmek: NFT'lerin Eşya Niteliği ve Eşya Hukuku Bakımından Geleceği Üzerine Bir İnceleme' (2022) 34 (1) *Selçuk Üniversitesi Hukuk Fakültesi Dergisi* 1312.

[28] Tekelioğlu (n 27) 1313.

[29] Medhansh Kumar, 'Million Dollar Meme: Non-Fungible Tokens and Their Regulation' (2022) https://www.scconline.com/blog/post/2022/01/12/non-fungible-tokens-and-their-regulation/ accessed 3 February 2025.

[30] Francis de Zulueta, *The Institutes of Gaius, Part II Commentary* (Clarendon Press 1953) 55-57.

regarding risk: for such purposes, fungible things were completely interchangeable, since one instance was as good as another; not so for non-fungible things. In general, only non-fungible things could be used without being consumed. Therefore, there could be no usufruct of fungibles.[31]

The essential factor distinguishing items in both contemporary contexts and within Roman legal frameworks is that uniqueness imparts additional value. Fungible items are relatively commonplace; for instance, exchanging one $10 bill for another does not alter the total amount of cash possessed. Similarly, cryptocurrencies exhibit fungibility, as one bitcoin can be exchanged for another without any variation in value or utility. In contrast, pink diamonds cannot be seamlessly substituted for one another due to variations in their cuts and crystal structures, rendering them non-fungible. The operation of NFTs, which exist exclusively within the digital realm, further complicates the concept of fungibility.[32]

Blockchain-based NFTs are digital representations that are uniquely identifiable and associated with either physical or digital items. Typically, these tokens are indivisible into smaller units. Tokens represent digital, physical, virtual, and legal rights or assets. Additionally, they provide the ability to use or access a platform. Tokens grant their holders a right, facilitate the exchange or transfer of value, and provide access to a platform or service. From a technical perspective, a token is an algorithm implemented on a blockchain as a smart contract.[33]

NFTs encapsulate structured metadata that pertains to specific physical or digital objects. These tokens function as distinct identifiers and are often not directly linked to the objects they represent. Proponents argue that NFTs enhance the interoperable commercialisation of both digital and physical assets. Non-fungible tokens (NFTs) constitute a particular category of digital assets, akin to cryptocurrencies, but with unique characteristics and applications.[34]

NFTs started reaching the fine art market regarding pricing, with Beeples 'First 5000 Days' selling for 69 million.[35] Shortly thereafter, they were diversified further with the minting of, e.g., tweets,[36] newspaper covers[37] and even law review articles. Driven by venture capital, cryptocurrency investments, and speculative enthusiasm, both the marketplaces and their supporting infrastructure experienced substantial expansion.[38] In the wake of this expansion, NFTs have come to encompass a wide array of assets, including musical compositions, physical objects, academic publications, and more. In some cases, these were merely experimental endeavours; in others, they represented attempts by founders or investors to establish unique niches. Furthermore, some proponents argue that this process of tokenization may contribute to the emergence of a new paradigm in property rights.[39]

Blockchain-based NFTs are digital assets that are uniquely identifiable and represent either physical or digital items. Typically, these tokens are indivisible into smaller units. NFTs encapsulate structured metadata

[31] Rafael Domingo, 'The Law of Property in Ancient Roman Law' (2017) SSRN Electronic Journal 3.

[32] Kumar (n 29).

[33] Horst Treiblmaier, 'The Token Economy as a Key Driver for Tourism: Entering the Next Phase of Blockchain Research' (2021) 91 *Annals of Tourism Research* 2.

[34] Florian Idelberger and Peter Mezei, 'Non-Fungible Tokens' (2022) 11(2) *Internet Policy Review* 2.

[35] Beeple, *Everydays: The First 5000 Days* Christie's (2021) https://onlineonly.christies.com/s/beeple-first-5000-days/beeple-b-1981-1/112924 accessed 3 February 2025.

[36] Elizabeth Howcroft, 'Twitter Boss Jack Dorsey's First Tweet Sold for $2.9 Million as an NFT' (2019) https://www.reuters.com/article/us-twitter-dorsey-nft-idUSKBN2BE2KJ accessed 3 February 2025.

[37] The Economist, 'Why We Are Selling Our Cover as an NFT: How We Set It Up And Decided It Was Worth Doing' (2021) https://www.economist.com/the-economist-explains/2021/10/21/why-we-are-selling-our-cover-as-an-nft accessed 3 February 2025.

[38] Shanti Escalante De Mattei, 'Has Been the Year of the NFT. But What Exactly Is an NFT?' (2019) https://www.artnews.com/art-news/news/nft-guide-1234614447/ accessed 3 February 2025.

[39] Idelberger and Mezei (n 34) 3.

that pertains to specific physical or digital objects. The tokens serve as distinct identifiers and are frequently not directly associated with the objects they represent.[40]

Essentially, the aim of this study is to discover how the criteria used in the Roman Law to distinguish between fungible and non-fungiable things can be used in a logical framework in the legal regime that today's NFT will be subject to in terms of property law.

IV. Corporeality in Roman Law: The Legal Boundaries of Materiality

When inquiring about Roman legal practice, one will encounter casuistics within the Digests, starting from the conceptual duality of "*corporalis-incorporalis*". This is not due to the Romans deducing legal principles from abstract concepts or theories; rather, it is the closest-to-source search strategy. The term "*incorporalis*" is rarely encountered, while "*corporalis*" and the noun "*corpus-corpora*" (in various senses) appear more frequently. "*Corporalis*" conveys the notion of the corporeal, whereas "*corpus*" does not exclusively pertain to an individual physical entity but can also signify a multipart unity, such as a composite entity.[41] The evolution of these concepts and their philosophical underpinnings has been extensively explored.[42]

We must look at intellectual operations within the realm of law that problematise the concept of a thing. In analysing the relationships between material and abstract entities, primarily within the legal context, there exists a philosophical dimension, which we will mention since it pertains to both the question of existence and the activity of defining.[43]

The distinction to be dealt with is that between corporeals, i.e. things *quae tangi possunt*[44] and incorporeals, i.e. things *quae tangi non possunt*.[45] The distinction is found in Cicero:

Cic. Topica (5.27)

"Esse ea dico quae cerni tangique possunt, ut fundum aedes, parietem stillicidium, mancipium pecudem, supellectilem penus et cetera; quo ex genere quaedam interdum vobis definienda sunt. Non esse rursus ea dico quae tangi demonstrarive non possunt, cerni tamen animo atque intellegi possunt, ut si usus capionem, si tutelam, si gentem, si agnationem definias, quarum rerum nullum subest quasi corpus, est tamen quaedam conformatio insignita et impressa intellegentia, quam notionem voco. Ea saepe in argumentando definitione explicanda est."

"Definition is a speech that explains that which is defined. But of definitions there are two principal kinds: one, of those things which exist; the other, of those which are understood. The things which I call existing are those which can be seen or touched; as a farm, a house, a wall, a gutter, a slave, an ox, furniture, provisions, and so on; of which kind of things some require at times to be defined by us. Those things, again, I say have no existence, which are incapable of being touched or proved, but which can be perceived by the mind and understood; as if you were to define usucaption, guardianship, nationality, or relationship;

[40] Idelberger and Mezei (n 34) 1.

[41] In this context, it is helpful to recall that ownership in Roman Law was initially approached primarily from a procedural perspective and later evolved into a more material understanding. Subsequently, the material understanding of ownership was limited to tangible things, particularly when a thing (*res*) was conceived solely as a finite material portion of the universe (*res corporalis*), leaving rights and other intangible elements (*res incorporalis*) outside of this concept. Thus, it became possible for intangible "ownership" to emerge as a concept distinct from the notion of ownership. Pascal Pichonnaz, 'Le Concept de Maîtrise Exclusive des Données Numériques: Quelques Réflexions Discursives' (2021) 140(4) *Revue de droit suisse* 427-428

[42] Christian Baldus, 'Res Incorporales im Römischen Recht' in Stefan Leible, Matthias Lehmann and Herbert Zech (eds), *Unkörperliche Güter im Zivilrecht* (Mohr Siebeck 2011) 8.

[43] Massimo Brutti, *Il Diritto Privato Nell'Antica Roma* (3rd edn, Giappichelli 1941) 264.

[44] Gai. I. 2.13.

[45] Gai. I. 2.14.

all, things which have no body, but which nevertheless have a certain conformation plainly marked out and impressed upon the mind, which I call the notion of them. They often require to be explained by definition while we are arguing about them."[46]

That Cicero is thinking of the distinction not simply in philosophical but also in legal terms is shown by his choice of legal concepts as his examples of incorporeal things.[47] The definition has been taken from the writings of jurists and were not, as stated by the author written from memory.[48] According to Cicero, the identity of a thing resides in the intellect of the one representing it. Therefore, even what cannot be touched is conceived and defined. In the reality thus represented, there is a "formative" element that determines the thing and outlines its boundaries.[49]

Seneca, on the other hand, (Epistulae ad Lucilium 6.58.11), states that the distinction between corporeal and incorporeal does not imply different conformations; it lies within the unity of being.

Seneca, (Epistulae ad Lucilium 6.58.11)

"Etiam nunc est aliquid superius quam corpus; dicimus enim quaedam corporalia esse, quaedam incorporalia. Quid ergo erit ex quo haec deducantur? illud cui nomen modo parum proprium imposuimus, 'quod est'. Sic enim in species secabitur ut dicamus: 'quod est' aut corporale est aut incorporale."

Quintilian (Institutio Oratoria 1.4.20) attests that this division was already prevalent among grammarians:

Quintilian, (Institutio Oratoria 1. 4. 20)

«Alii tamen ex idoneis dumtaxat auctoribus octo partes secuti sunt, ut Aristarchus et aetate nostra Palaemon, qui vocabulum sive appellationem nomini subiecerunt tamquam speciem eius, at ii qui aliud nomen, aliud vocabulum faciunt, novem. Nihilominus fuerunt qui ipsum adhuc vocabulum ab appellatione diducerent, ut esset vocabulum corpus visu tactuque manifestum: "domus" "lectus", appellatio cui vel alterum deesset vel utrumque: "ventus" "caelum" "deus" "virtus". Adiciebant et adseverationem, ut "eheu", et tractionem, ut "fasciatim": quae mihi non adprobantur.»

The same author writes that the concept of something immaterial, anticipating Gaius, is captured by his words: "*... ius quod sit incorporale, adprendi manu non posse*", (Institutio Oratoria 5.10.116).[50]

[46] The intangibility signals the fact that in this case, we are facing a legal abstraction. This statement is situated around the end of the second century B.C. and reveals an awareness of duality between the material and immaterial realms of the legal experience. Cicero's text has a broader scope. Brutti (n 33) 264-265.Cicero divides the definitions into two main categories (*genera prima*), which reflect the very concept of corporeal-incorporeal: On the one hand, there are definitions of objects that exist (*earum rerum quae sum*), and on the other hand, there are definitions of objects that are merely conceptualised (*quae intelleguntur*). In a subsequent explanation, Cicero immediately employs two definitions: Cicero intends to speak about the existence of an object (*Esse ea dico.*) when one can perceive and touch something (*quae cerni tangique possunt*). He provides examples such as land, buildings, walls, roofs, slaves, livestock, household goods, food supplies, and more (*ut fundum aedes, parietem stillicidium, mancipium pecudem, supellectilem penus et cetera*). These examples are drawn from the rural and domestic economy. They simultaneously signify matters of significant importance for legal life. Christoph Becker, *Die "res" bei Gaius -Vorstufe einer Systembildung in der Kodifikation? Zum Begriff des Gegenstandes im Zivilrecht* (Heymanns 1999) 59.

[47] Pietro Bonfante, *Corso di Diritto Romano, La Propriete*, vol II (Giuffrè Editore 1966) 8.

[48] Fritz Schulz, *Principles of Roman Law* (Clarendon Press 1956) 47.

[49] Brutti (n 43) 265. Cicero, on the other hand, speaks of non-existence (*Non esse rursus ea dico*) in relation to those things that cannot be touched or demonstrated (*quae tangi demonstrarive non possunt*). As examples of this, Cicero mentions cases where one might want to define adverse possession, guardianship, lineage, or kinship (*ut si usus capionem, si tutelam, si gentem, si agnationem* definias). Once again, he chooses examples that would have been familiar to the reader, especially to the legal expert Gaius Trebatius. These concepts lack corporeal embodiment (*quarum rerum nullum subest [quasi] corpus*). However, certain notions exist about them, and there are conceptions of them (*est tamen quaedam conformatio insignita et impressa intellegentia, quam notionem voco*), and to elucidate such a concept, one can establish a definition while arguing (*Ea saepe in argumentando definitione explicanda est*). Becker (n 46) 59-60.

[50] Brutti (n 43) 265. The concept of Being was employed by Plato in six distinct ways (*sex modis*). To comprehend these uses of the concept, one must, as Seneca continues, first understand how genera (*genus*) and species (*species*) are formed, particularly how one arrives at the *genus* upon which every division (*omnis divisio*) depends, encompassing everything (*quo universa conprensa sunt*). The highest *genus* is reached by a retrograde movement, which necessarily leads back to the starting point. It is assumed in this context that multiple *species* are held together within a *genus*, akin to a bond (*vinculum*). Consequently, Seneca correctly groups together Man, Horse, and Dog within the category of "Living Beings" (animal). From there, the discussion extends to the realm of "Animate" (*animantia*), encompassing living beings and plants. Above this, there is the category of "Body" (*corpus*), summarising both living and lifeless entities. And preceding this, there exists as the highest *genus* (*genus primum et antiquissimum*) that which has received the unfortunate term (*nomen*) "*quod est*" dividing into the corporeal (*corporalia*) and

Quintilian, (Institutio Oratoria 5.10.116)

«*Tum secundo gradu, non potuisse donari a uictore ius, quia id demum sit eius quod teneat: ius, quod sit incorporale, adprendi manu non posse. Hoc reperire est difficilius quam cum inueneris argumentis adiuuare, ut alia sit condicio heredis, alia uictoris, quia ad illum ius, ad hunc res transeat.*»

The sole important practical effect of the distinction is that incorporeal *res nec mancipi* could not be transferred by *traditio* but required *in iure cessio*.[51]

The distinction of "*corpora*"[52] according to their structure and function; concepts of "*pars*", "*portio rei*", "*accessio rei principalis*", "*instrumentum*", "*fructus*". The famous passage from Pomponius' text, preserved in D. 41.3. 30 pr. (*Pomponius libro 30 ad Sabinum*) contains the following distinction:[53]

D. 41.3.30 pr. *Pomponius libro 30 ad Sabinum*

pr. "*Rerum mixtura facta an usucapionem cuiusque praecedentem interrumpit, quaeritur. Tria autem genera sunt corporum, unum,* ***quod continetur uno spiritu*** *et Graece* **hynwmenon** *[continuum] vocatur, ut homo tignum lapis et similia: alterum, quod ex contingentibus, hoc est* ***pluribus inter se cohaerentibus constat****, quod sunymmenon vocatur, ut aedificium navis armarium: tertium, quod ex distantibus constat, ut corpora plura non soluta, sed uni nomini subiecta, veluti populus legio grex. Primum genus usucapione quaestionem non habet, secundum et tertium habet…*"

"It is asked whether a mixture of different things interrupts the usucaption that has begun to run with reference to each of them. There are three kinds of things that can be divided; first, those which are included in a substance of the same nature, styled by the Greeks *phenomenon*, that is to say united, as a slave, a piece of timber, a stone, and other property of this kind. Second, things that are joined by contact, that is to say, which have coherence, and are connected, as a house, a ship, a cupboard. Third, such as are formed of distinct objects, as different bodies which are not united but are included under a single appellation, for instance, a people, a legion, a flock. No question can arise with reference to the usucaption of the first of these, but there is doubt as far as the second and third are concerned."[54]

---

the incorporeal (*incorporalia*). Here lies the origin of things (*initium rerum est*). From it, one proceeds to all other genera, their species, and the corresponding individuals (*singula*) belonging to each. Becker (n 46) 61-62.

[51] Gai. I. 2.28. Alan Watson, *The Law of Property in the Later Roman Republic* (Clarendon Press 1984) 14. In Gai. I. 2.19, it is stated that "*res nec mancipi*" if corporeal, transfer into the ownership of the acquirer through mere "*traditio*" (delivery, contingent, of course, upon the existence of a "causa"): "*si modo corporales sunt et id recipiunt traditionem*" and thus their possession can be transferred at all. So, it revolves around possession. This is repeated in Gai. I. 2.28. In that context, Gaius states concerning modes of transfer: "*Incorporates res traditionem non recipere manifestum est*" meaning "*it is evident that incorporeal things do not allow a transfer of possession*". This statement is textually identical to the one previously cited in the commentary on the Provincial Edict (D. 41.1.43.1). In the case of inheritances, he once again differentiates under the aspect of modes of transfer: The entire inheritance can only be transferred through "assignment before the court" "*in iure cessio*" (Gai. I. 2.34), and then the corporeal objects contained within it pass along (Gai. I. 2.35a). And concerning obligations, Gaius affirms that they are not transferred in the same way as corporeal things (Gai. I. 2.38). Baldus (n 42) 18-19.

[52] *Corpora* has generally been understood in the sense of "*res corporales*" (corporeal things), and the tripartition has traditionally been attributed by interpreters to things, distinguishing simple things (corpora unita or continua), composite things (*corpora ex cohaerentibus* or *ex contingentibus*), and collective things or universality of things (*corpora ex distantibus*, or using the terminology adopted by medieval jurists, based on a single interpolated text (Ulp. Dig. 7, 1, 70, 3), "*universitates rerum*" or "facti"). On the contrary, PEROZZI has argued that corpora constituted a different and broader category than "*res*" particularly rejecting the possibility of qualifying the universality of things as "*res corporalis*" and pointing out that Pomponius gives examples of *corpora* such as "*homo*", "populus", "l*egio*", which were certainly not considered "*res*". BONFANTE responded to this hypothesis, noting that "*corpus*", when it does not have the narrower sense of "body" is simply a synonym for "*res*" (understood as "*corporalis*") in all uses, legal and non-legal, of the word, and that these concepts can be explained only by assuming conscience and social economy as criteria, without claiming an absolute value and a more precise reference to the natural reality. Francesco Calasso (ed), *Cosa (Storia)* in *Enciclopedia Del Diritto*, XI-Cosa-Delib (Giuffrè Editore 1962) 8.

[53] For detailed information about the origin of this classification, see: Heinrich Robert Goppert, 'Der Ursprung der Eintheilung der corpora in I. 30. D. de usurp. 41, 3' in Heinrich Robert Goppert (ed), *Über Einheitliche, Zusammengesetzte und Gesammt-Sachen Nach Römischen Recht* (Studia Juridica 1970) 8-19.

[54] Samuel P. Scott, *The Enactments of Justinian. The Digest or Pandects* in *The Civil Law*, Cincinnati (1932) https://droitromain.univ-grenoble-alpes.fr/Anglica/D41_Scott.htm#III accessed 3 February 2025.

Gaius[55] makes a significant distinction between tangible and intangible objects after determining the available things:[56]

Gai. I. 2.12

"*Quaedam praeterea res corporales sunt, quaedam incorporales.*"

"Moreover, some things are corporeal and others are incorporeal."[57]

It is repeated in the Digests and also in Justinian's Institutes:

D. 1.8.1.1 *Gaius libro secundo institutionum*

"Quaedam praeterea res corporales sunt, quaedam incorporales. Corporales hae sunt, quae tangi possunt, veluti fundus homo vestis aurum argentum et denique aliae res innumerabiles: incorporales sunt, quae tangi non possunt, qualia sunt ea, quae in iure consistunt, sicut hereditas, usus fructus, obligationes quoquo modo contractae. Nec ad rem pertinet, quod in hereditate res corporales continentur: nam et fructus, qui ex fundo percipiuntur, corporales sunt, et id quod ex aliqua obligatione nobis debetur plerumque corporale est, veluti fundus homo pecunia: nam ipsum ius successionis et ipsum ius utendi fruendi et ipsum ius obligationis incorporale est. Eodem numero sunt et iura praediorum urbanorum et rusticorum, quae etiam servitutes vocantur."

"**Moreover, some things are corporeal, and some are incorporeal." Those are corporeal which are tangible, as for instance land, slaves, clothing, gold, silver, as well as innumerable other articles. Those are incorporeal that cannot be touched as an usufruct, and obligations, in whatever way contracted.** It does not matter if corporeal things are included in an estate, for the crops taken from land are corporeal, and whatever is owing to us through the obligation of another, is for the most part corporeal, as land, slaves, money; still, the right of succession, the right of use and enjoyment, and the right based upon an obligation are all incorporeal. To the same class belong all the rights of urban and rustic estates, which are designated as servitudes."[58]

Inst. 2.2 pr.

"*Quaedam praeterea res corporales sunt, quaedam incorporales.*"

"Again, some property is corporeal, and some is incorporeal."[59]

This is the conceptual starting point for the modern problematic of incorporeal things or the restriction of the notion of property to tangible objects in contemporary German Civil Law, whereby the designation of "tangible thing" represents a pleonasm and the designation of "incorporeal thing" is deemed an impossibility.[60]

Some legal systems take a narrow approach concerning the object of property, which is limited to "corporeal things", as is the case under both German and Swiss law (e.g. §90 Bürgerliches Gesetzbuch -

[55] Gaius (2nd century AD) wrote several works for legal practice, but gained recognition primarily through the first beginner's textbook of Roman law, the "Institutiones", written around 161 AD. This work incorporates Greek textbook traditions and is somewhat didactic in nature. It is structured at the highest level according to the schema of *personae- res actiones*. The "*res*" are further divided into three aspects: they can be within or outside the estate (*in nostro patrimonio-extra patrimonium nostrum*), they can be corporeal or incorporeal, and they can ultimately be subject to ownership transfer through mancipation or not. Baldus (n 42) 17.

[56] Becker (n 46) 40. Gaius teaches that "*quaedam praeterea res corporales sunt, quaedam incorporales*": he specifies that the former are "*res, quae tangi possunt*", that is, the countless material properties, both real and movable, while the latter are "*quae tangi non possunt*", such as those that exist in law, like inheritance, usufruct, and obligations contracted in any way. It follows, adds the legal expert, that "*res corporales*" include those included in an inheritance, the fruits belonging to the usufructuary, and often even "*quae ex aliqua obligatione nobis debetur*", meaning the object of the obligation, because precise consideration must be given to the right itself, "*nam ipsum in successionis et ipsum ius fruendi et ipsum ius obligationis incorporate est*" (Gaius 2.12-14; compare Gai. D. 1.8.1.1; Gai. Epit. 2.1.2.3; Paul. Sent. 3.6.11). Calasso (n 52) 6.

[57] William M. Gordon and Olivia F. Robinson, *The Institutes of Gaius* (Cornell University Press 2001) 127.

[58] Scott (n 54).

[59] Peter Birks and Grant McLeod, *Justinian's Institutes* (Cornell University Press 2001) 61.

[60] Becker (n 46) 40.

BGB[61]- or §641 Swiss Civil Code[62]). This means that tokens could not be regarded as the object of property in these legal systems,[63] e.g., in Germany they have been defined as "**eine faktische Vermögensposition**".[64] Notwithstanding such a narrow approach, the application of §453 BGB[65] (which states that the provisions on the purchase of things apply with the necessary modifications to the purchase of rights and other objects) has been proposed to allow for the purchase of cryptocurrencies under German law, and likewise, it is suggested that §713 Swiss Civil Code[66] should be applied to the ownership of tokens (it regards as chattels the forces of nature that may be the subject of legal rights and which do not form part of any immovable property).[67]

Material goods (*res corporales*) were those that had a physical existence and could be affected as a result (*res quae tangi possunt*).[68] Immaterial goods (*res incorporales*), on the other hand, were those that did not possess a physical existence and thus could not be affected (*res quae non tangi possunt*).[69] These were solely outcomes of human thought processes (*res quae sola mente concipitur*), as Gaius formulated,[70]

[61] *Bürgerliches Gesetzbuch* (German Civil Code, promulgated 24 August 1896) https://www.gesetze-im-internet.de/englisch_bgb/ accessed 3 February 2025.

[62] *Swiss Civil Code* (Switzerland, adopted 10 December 1907, status as of 23 January 2023) https://fedlex.data.admin.ch/filestore/fedlex.data.admin.ch/eli/cc/24/233_245_233/20230123/en/pdf-a/fedlex-data-admin-ch-eli-cc-24-233_245_233-20230123-en-pdf-a-2.pdf accessed 3 February 2025.

[63] In Swiss law, it has been argued that tokens are not corporeal objects, meaning that they cannot be owned, see: Der Bundesrat, *Bericht des Bundesrates: Rechtliche Grundlagen für Distributed Ledger-Technologie und Blockchain in der Schweiz* (2023) 49 https://www.newsd.admin.ch/newsd/message/attachments/55150.pdf accessed 3 February 2025.

[64] Matthias Lehmann and Felix Krysa, 'Blockchain, Smart Contracts und Token aus der Sicht des (Internationale) Privatrechts' (2019) 2 *Bonner Rechts Journal* 90, 96. For their part, scholars point out the need to recognise the property- like rights attached to tokens (eigentumsähnliches Recht) as far as possible, see: Philiph Koch, 'Die "Tokenisierung" von Rechtspositionen als digitale Verbriefung' (2018) 30(6) *Zeitschrift für Bankrecht und Bankwirtschaft (ZBB/JBB)* 367.

[65] Section 453-Purchase of rights, consumer contract on the purchase of digital content: "(1) The provisions governing the purchase of things apply accordingly to the purchase of rights and other objects. The following provisions are not to be applied to a consumer contract on the sale of digital content by a trader: 1. section 433 (1) sentence 1 and section 475 (1) on the delivery of the object of the purchase and the time of performance, as well as 2. section 433 (1) sentence 2, sections 434 to 442, 475 (3) sentence 1, (4) to (6) and sections 476 and 477 on the rights in the case of defects. The provisions of Division 3 Title 2a Subtitle 1 take the place of the provisions not to be applied in accordance with sentence 1. (2) The seller bears the costs of creation and transfer of the right. (3) If a right comprising the right to possession of a thing is sold, then the seller is obliged to deliver the thing to the buyer free of material defects and defects of title".

[66] Chattel ownership relates to movable physical objects and to forces of nature that may be the subject of legal rights and which do not form part of any immovable property.

[67] Rosa M. Garcia and Hector Simón-Moreno, 'The Digital Tokenization of Property Rights: A Comparative Perspective' (2021) 41 *Computer Law & Security Review* 4, 5.

[68] Gai. I. 2.13.

[69] Gai. I. 2.14.

[70] Gaius divides the concept of "*res*" into corporeal and incorporeal things. This "*res*" concept, along with its subdivisions, has been heavily criticised by modern Roman law scholars. According to KRELLER, Gaius has caused a "virtual confusion" by categorising subjective rights, which are considered as "*res*" into the groups of corporeal and incorporeal things. Tangible objects on the one hand, and positions of legal content (*res quae in iure consistunt*) on the other, are so fundamentally distinct that they simply cannot be compared and thus are unsuitable as a basis for such classification. Hans Kreller, 'Res als Zentralbegriff des Institutionensystems' (1948) 66(1) Zeitschrift der Savigny-Stiftung für Rechtsgeschichte: Romanistische Abteilung 585. According to DERNBURG, Gaius fell victim to a common linguistic usage that had emerged in everyday life, where the term "thing" was used instead of "property" to refer to the object of ownership. When Gaius designates corporeal things as components of wealth, he is essentially referring to the right of ownership over these things. He unintentionally equates the right of ownership with the thing itself, as it completely encompasses it. Consequently, he would perceive the right of ownership as something tangible, even though in reality, like any other right, it exists only in the realm of ideas. Heinrich Dernburg, *Pandekten*, vol 1 (6th edn, H W Müller 1903) 67. According to KASER, Gaius was compelled to introduce the concept of "unfathomable breadth" for the *res* category due to the division of all private law into relationships with personae, *res,* and *actiones*. This is because the res, set in opposition to the legal subject (*persona*), is considered the ultimate legal object. In order to be useful, Gaius needed to differentiate this comprehensive concept of *res* into corporeal and incorporal *res*. As a result, subjective rights came alongside the things in the common sense. However, it is evident that the extensive concept of res lacked practical significance and faced criticism from the legal community due to its division. The fundamental misunderstanding of the function of the term pair "*res corporales-res incorporales*" by Gaius in modern Roman law scholarship stems from his inability to disassociate from the notions of the Pandectist tradition. Gaius did not start from the contemporary central concept of private law, the "subjective right". Consequently, this term pair does not pertain to a classification of the "subjective right". Instead, it serves as a representation of the corporeal and incorporal res. The incorporal *res*, such as ususfructus and obligations, are conceived in the same tangible manner as the corporeal *res*. Gaius undertook a classification of objects independently of the concept of subjective rights, and thus did not attempt to present this concept. Max Kaser, 'V. Gaius und die Klassiker' (1953) 70(1) *Zeitschrift der Savigny-Stiftung für Rechtsgeschichte: Romanistische Abteilung* 142; Gerold Hoop, *Kodifikationsgeschichtliche Zusammenhänge des Abtretungsverbots* (Duncker & Humblot, 2022) 124-126.

encompassing rights to inheritances, usage rights, and contractual obligations of various kinds.[71] Roman law maintained the concept of ownership of material goods. For immaterial goods, certain provisions that pertained to tangible rights were not applicable. For example, *traditio,*[72] *possessio*[73] and *usucapio*[74] applied only to tangible property. The autonomy of immaterial assets was already recognised in Roman law.[75]

Gai. I. 2.13

"*Corporales hae sunt, quae tangi possunt, uelut fundus, homo, uestis, aurum, argentum et denique aliae res innumerabiles.*"

"Corporeal things are those that can be touched, as, for instance, land, a slave, clothing, gold, silver, and innumerable other objects."[76]

Physical objects include, for example, a piece of land, a table, a ring, and in ancient Rome, even a slave. Article 292 of the Austrian Civil Code (ABGB) refers to things that are perceptible to the senses. This emphasises the sensory perceptibility of physical objects.[77]

Physical things could be touched (land, gold, clothes), while intangible things, of course, could not be touched (rights and obligations, for example). The distinction was important because, in general, only physical things could be possessed (possession required a physical holding), and only they could be acquired by informal conveyance (*traditio)* or usucaption (acquiring title to property by uninterrupted possession).

However, in the ABGB, property law is not limited to physical objects due to the broad concept of "things". According to Article 285 of the ABGB, "Anything that is distinct from a person and serves the use of humans is legally referred to as a thing."[78]

On the other hand, in Roman Law, "*res incorporales*" refers to intangible things that cannot be physically grasped (*quae tangi non possunt*):[79]

Gai. I. 2.14

"*Incorporales sunt, **quae tangi non possunt**, qualia sunt ea, quae in iure consistunt, sicut hereditas, ususfructus, obligationes quoquo modo contractae. nec ad rem pertinet, quod in hereditate res corporales continentur, et fructus, qui ex fundo percipiuntur, corporales sunt, et id, quod ex aliqua obligatione nobis debetur, plerumque corporale est, ueluti fundus, homo, pecunia: nam ipsum ius successionis et ipsum ius utendi fruendi et ipsum ius obligationis incorporale est. eodem numero sunt iura praediorum urbanorum et rusticorum. [. . . . . vv. 2 1/4 . . . . .] non extollendi, ne luminibus uicini officiatur: item fluminum et stillicidiorum idem ius ut [. . . . . vv. 5 . . . . .]*"

[71] Dário Moura Vicente, 'Unkörperliche Güter im Romanischen Rechtskreis' in Stefan Leible, Matthias Lehmann and Herbert Zech (eds), *Unkörperliche Güter im Zivilrecht* (Mohr Siebeck 2011) 77.

[72] Gai. I. 2.28.

[73] D. 41.2.3.pr. *Paulus libro 54 ad edictum*.

[74] D. 41.1.43.3. *Gaius libro septimo ad edictum provinciale*.

[75] The concepts in Gaius are not left indeterminate. This attention to detail should evoke anticipations regarding the distinctive trajectory of the discourse on asset allocation and, consequently, the marketability of objects. Becker (n 46) 40. Gaius describes "*res corporales*" as tangible objects, similarly to D.1.8.1.1 and also in Inst. 2.2.1., (*quae tangi possunt*), which include land, human beings (*homo*, meaning slave or servant), clothing, gold, silver, and countless other items (*aliae res innumarabiles*). The property rights thus create a legally enforceable dominion over an object that can be asserted against anyone. The Roman jurists, however, only considered physical objects as subjects of property dominion. Physical objects, known as *res corporales*, are those that can be touched: *Quae tangi possunt.* Nikolaus Benke and Franz-Stefan Meissel, *Übungsbuch zum Römischen Sachenrecht* (12th edn, Manz Verlag, 1990) 10.

[76] Gordon and Robinson (n 57) 127.

[77] Benke and Meissel (n 75) 10.

[78] Benke and Meissel (n 75) 10, fn. 3.

[79] Smilarly in D.1.8.1.1 *Gaius libro secundo institutionum* and also in Inst. 2.2.2.

"Incorporeal **things are such as are not tangible**, and are those consisting merely of rights, as, for instance, inheritances, usufructs, and obligations, no matter in what way the latter may have been contracted. For while corporeal things are included in an estate, and the crops gathered from land are corporeal, and what is due to us under the terms of some obligation is, for the most part, of a corporeal character, for example, land, slaves, money; still, the right of succession, the right of use and enjoyment, and the right of obligation, are incorporeal. To the same class belong rights attached to urban and rustic estates, which are also called servitudes. Among these are the right to raise a building higher and obstruct the lights of a neighbour; the right to prevent a building from being raised, so that the lights of a neighbour may not be obstructed; the right to the use of streams, and to have rainwater fall upon the premises of another."[80]

"*Res incorporales*" refers to intangible things (*quae tangi non possunt*). This includes the "in law" existing assets: *quae iure consistunt*[81] or *quae in iure consistunt.*[82]

As the text progresses, both in Gaius and in Justinian's Institutes, it becomes increasingly apparent that it aims to remain as open-ended as possible. Only examples such as inheritance (*hereditas*), usufruct (*ususfructus*), and obligations, regardless of how they arise (*obligationes quoquo modo contactae*), are mentioned. To avoid misunderstandings, Gaius emphasises that by "*incorporalis*," he refers to the respective right, namely the right of inheritance (*ipsum ius successionis*), the right of usufruct (*ipsum ius utendi fruendi*), the right arising from an obligation (*ipsum ius obligationis*), as well as rights over real properties or land, namely servitudes (*servitutes*). However, it should not be understood that tangible assets are included in the inheritance, that the fruits of a property are physical, or that what is owed from an obligation, such as property, slaves, or money, is tangible.[83]

Roman property law therefore deals with the powers of dominion over physical objects. Conversely, in Rome, rights are understood as incorporeal things, and there are generally no property rights attached to

[80] Edward Poste, *Gai Institutiones or Institutes of Roman Law*, Book II, 'Equal Rights (De Rebus)' (Oxford, 1904) https://droitromain.univ-grenoble-alpes.fr/Anglica/gai2_Poste.htm#10 accessed 3 February 2025.

[81] The absence of the preposition in the Gaius manuscript can be attributed to an oversight by the late antique copyist. However, even if the original text indeed read "*iure*" and not "*in iure*", it must be understood as it is found in Justinian's *Institutes* and in the *Digests*. Therefore, the translation as a mere affirming phrase, such as "those that exist in law" or "those that exist by right", seems appropriate. Martin G David and Hein Leopold Wilhelmus Nelson, *Gai Institutionum Commentarii IV mit Philologischem Kommentar Herausgegeben* (Brill, 1960) 240. The meaning of the expression "(in) iure" is not unequivocal. It can mean that the incorporeal object "exists in a right". According to this interpretation, anything that presents itself as a right (of a person) would be considered *res incorporalis*. This interpretation is favoured by the translations of LAMMEYER and HUCHTHAUSEN. See: Joseph Lammeyer, *Die Institutionen des Gaius* (Ferdinand Schöningh, 1929), Gai. I. 2.14.; Liselotte Huchthausen, 'Gaius Institutionen' in Liselotte Huchthausen and Herder Gottfried (eds), *Römisches Recht* (Aufbau Verlag, 1991), Gai. I. 2.14. Another, more restrictive interpretation equates "(in) iure" with "legally". This can be found in the translation of Justinian's Institutes by BEHRENDS, KNUTEL, KUPISCH, and SEILER. See: Okko Behrends, Rolf Knutel, Berthold Kupisch and Hans Hermann Seiler, *Corpus Iuris Civilis, Teil 1: Institutionen* (4th edn, CF Müller 1997), Inst. 2.2.2. However, this interpretation is restrictive in the sense that referring to the rules of law does not necessarily lead to a definitive statement but rather allows for further criteria or even conclusive enumerations to follow.

[82] Becker (n 46) 40.

[83] Hence, it appears that the notion of the realm of goods has already succeeded in distancing itself from sensory perceptibility. However, those who anticipate that the categorisation of res into corporeal and incorporeal objects would serve as a foundational framework for exploring the issue of object disposition will, in fact, be disappointed. It seems that Gaius did not intend to establish such a systematic framework. Becker (n 46) 41.

[84] Heinrich Hackfeld Pfluger, 'Über Körperliche und Unkörperliche Sachen' (1947) 65(1) *Zeitschrift der Savigny-Stiftung für Rechtsgeschichte: Romanistische Abteilung* 340. There is a strong objection to the Romans' practice of grouping together fundamentally different things as if they were of the same nature: real estate, slaves, clothing, gold and silver objects, usufruct, claims, servitudes, objects of rights on one hand, and subjective rights on the other. Attempts have been made to justify this by arguing that in everyday language, which has emerged from practical life but is upheld by the law, the term "thing" is used instead of "ownership" to refer to the object in question. This argument has been put forth notably by WINDSCHEID. See: Bernhard Windscheid, *Lehrbuch des Pandektenrechts* (Verlag von Ebner & Seubert 1879), (Pand. 1 § 42). Others have expressed more emphatic criticism. Von JHERING, a key figure in the development of modern legal theory, argued that ownership should be understood in terms of its function and not merely as a static identification with an object. This perspective emphasises the importance of maintaining a clear distinction between the concept of ownership and the physical or abstract object of ownership. See: Rudolph von Jhering, *Geist des Römischen Rechts auf den Verschiedenen Stufen Seiner Entwicklung* (Breitkopf und Härtel, 1865) 458. Furthermore, OERTMANN instructs us that the proper arrangement would have been either ownership, servitudes, claims, or things, persons, and services. A conflation of the *principia divisionis* constitutes a grave logical fallacy. See: Paul Oertmann, *Die Volkswirtschaftslehre des Corpus Juris Civilis* (Kessinger Publishing 1891) 29.

them.[84] An exception to this principle is, for example, the possibility of establishing a pledge right on a right, known as *pignus nominis*.[85]

In scholarly discussions, "*corpus corporalis*" appears as a conceptual framework that governs the application of rules concerning proprietary rights by name. However, it remains an incompletely developed conceptual framework from today's perspective. This is not surprising, as the Romans' focus was different: concepts were not primarily used as elements of a system, but as means for the proper resolution of individual cases (including the consideration and further development of the internal system). "*Incorporalis*" appears rarely in such contexts; instead, jurists speak of "*iura*" rights. Many objects that might possibly be classified as "incorporeal" today did not yet exist in Rome -computer data, securities, NFTs-; certain incorporeal interests such as honour and business reputation were, if necessary, protected through different means. In other words, Roman practice is of limited interest for a dogmatic-historical examination of incorporeal things.[86]

Now we turn to our final inquiry: What is the nature of the law of intangible assets in the Roman legal sphere? It has been determined thus far that, in comparison to regulations pertaining to tangible assets, the provisions regarding intangible entities have a distinct subject, namely intellectual creations. They necessitate a different balance of interests, with particular weight placed on the public interest. Furthermore, the provisions confer exclusive rights of a unique nature upon intangible assets. One can therefore assert that the aforementioned provisions possess a certain autonomy within the legal systems of the Roman legal sphere, differing from the regulations that apply to tangible assets.[87]

In the Roman legal sphere, commercial protection is typically upheld by the state, some of these provisions fall under the jurisdiction of administrative bodies, specific modes of use of copyright-protected works are released by law for informational and educational purposes, and certain infringements of rights pertaining to intangible assets are subject to criminal sanctions.[88]

V. Fungibility and Identification in the Roman Legal Tradition: Doctrinal and Textual Analysis

In Roman Law, there were fungible and nonfungible things.[89] Fungibles were "those things that are estimated by weight, number, or measure, for instance, wine, oil, corn, coined money, copper, silver, or gold" (Inst. 3.14 pr.). Nonfungible things were those identified and valued in and for themselves: e.g., a particular horse or piece of land or slave. The difference had legal relevance with respect to some legal relations, and specifically when it came to rules regarding risk: for such purposes, fungible things were completely interchangeable, since one instance was as good as another; not so for nonfungible things. In

[85] Benke and Meissel (n 75) 10, fn. 4.

[86] Baldus (n 42) 16.

[87] Vicente (n 71) 91.

[88] Vicente (n 71) 91.

[89] The distinction between fungible and non-fungible goods has its roots in the Roman legal tradition but has been disregarded by the Italian Civil Code, at least as a general criterion for the classification of things. However, it is true that references to the fungible or non-fungible nature of a thing appear in various provisions, leading to significant consequences in terms of rules (see, without claiming completeness, articles 670, 1202, 1243, 1516 of the Civil Code): this explains why the distinction has survived and also finds space in legal manuals. Carmelo Restivo, 'La Fungibilità dell'Oggetto Del Mutuo' (2012) 10 *Rivista di Diritto dell'Economia, dei Trasporti e dell'Ambiente* 394. According to GHIRETTI, it can be argued that the concept of fungibility identifies a narrower scope compared to that of *genus* only if the *genus* is assumed as a merely logical category, within which Articles 1178, 1782, and 1813 of the Civil Code outline a limited qualitative segment of fungible things. However, if the *genus*, as the author deems more appropriate, is considered a legal category and is constructed based on a qualitative assessment conducted in line with Articles 1178 and 396, then it expands the understanding of fungibility. Paolo Ghiretti, 'Genericità e Fungibilità nell'Obbligazione' (1974) 1 *Rivista del Diritto Commerciale e del Diritto Generale delle Obbligazioni* 264-268.

general, only non-fungible things could be used without being consumed. Therefore, there could be no usufruct of fungibles.

Inst. 3.14 pr.

"*Re contrahitur obligatio veluti mutui datione mutui autem obligatio in his rebus consistit quae pondere, numero mensurave constant, veluti vino, oleo, frumento, pecunia numerata, aere, argento, auro, quas res aut numerando aut metiendo aut adpendendo in hoc damus ut accipientium fiant, et quandoque nobis non eaedem res, sed aliae eiusdem naturae et qualitatis reddantur. unde etiam mutuum appellatum sit, quia ita a me tibi datur, ut ex meo tuum fiat. ex eo contractu nascitur actio quae vocatur condictio.*"

"An obligation is contracted by means of the property, for example, where delivery is made of an article to be returned in kind. An obligation of this description has reference to articles that can be weighed, counted, or measured, for instance, wine, oil, grain, money, copper, silver, and gold. For these things we deliver by counting, measure or weight, with the understanding that they shall belong to the parties receiving them, and that not the identical articles but others of the same nature and quality shall be returned to us; whence the article is styled mutuum, because it is given by me to you in such a way that it becomes yours through having been mine. From this contract the action-at-law which is designated *condictio* arises."[90]

The reference to quantity does not imply that the object of the contract must necessarily be a plurality of things, as it is dictated by the fact that fungible things typically acquire substance and are identified based on weight, number, or measurement. This characteristic was adopted in a well-known passage by Paul D. 12.1.2.1 (*Paulus libro 28 ad edictum*) as a central element in defining the concept of fungibility: *res quae pondere, numero, mensurave* constant would be considered fungible.[91]

The Romans, in order to express the concept of substitutability, used the phrase "*res quae in genera so functioned recipiunt*" (D.12.1.2.1 *Paulus libro 28 ad edictum*). From this expression, scholars have derived the term "*fungibiles*" properly qualified by SAVIGNY,[92] who prefers to speak of "things of quantity". Indeed, these are things that are considered based on their quantity, or as the Romans put it, things "*quae ponder, numero, mensurate consistunt*" (Inst. 3, 14, pr.).[93]

In Roman Law, the distinction between *res fungibiles* and *res nec fungibiles* is stated to be based on the objective nature of the things. In everyday life, goods determined by their quantitative characteristics, such as number, measure, or weight, are referred to as fungible goods. The type to which these goods belong is significant. For instance, a specific quantity of consumable goods such as grain, wine, or oil can be replaced by the same amount of fungible goods of the same kind. Fungible things are those identified by their quality and quantity in commercial transactions. In contrast, in the category of non-fungible things, the concrete

[90] Birks and McLeod (n 59) 105-106.

[91] Restivo (n 89) 394. Iustinianus, in his Institutes (Inst. 3.14 pr.) expresses himself in almost the same terms, yet he does not borrow his formula from Gaius' Institutes; rather, he draws from a later revision known as the "*aurea*" or "*res cottidianae*" (cf. D. 44. 7.1. 2 *Gaius libro secundo aureorum*). Concerning the title of the edict "*Si certum petetur*", Paul (D. 12. 1.2.1 *Paulus libro 28 ad edictum*) writes, "*Mutui datio consistit in his rebus, quae pondere numero mensura consistunt, quoniam eorum datio possumus in creditum ire*". Following this is the objectively grounded but inauthentic justification for formal reasons: "*quia in genere suo functionem recipiunt per solutionem quam specie*" It is from this proposition that ZASIUS, more than four centuries ago, coined the technical term "*fungible things*", often criticised but ultimately widely accepted, denoting fungible goods. See: Ulrich Zasius, *In Titulum Institutionum De Actionibus Enarratio* (Vincentius 1571) 17-18; Friedrich Carl von Savigny, *System des Heutigen Römischen Rechts*, vol 1 (Veit 1840) 123. Although "functio" does not at all mean vicarious interchangeability, as explained by ACCURSIUS, but rather validity or value. The passage in question thus deals with the fact that these things, concerning the execution of obligations, are considered according to their generic property, in genere; that in commercial transactions, they are typically determined based on quantity, rather than on specific individual qualities. About ACCURSIUS, see: Alma Mater Studiorum Università di Bologna, 'Famous People and Students, Accursius (Accursio)' (2024) https://www.unibo.it/en/university/who-we-are/our-history/famous-people-and-students/Accursius accessed 4 February 2025. Hermann Heumann and Gottlieb Seckel, *Handlexikon zu den Quellen des Römischen Rechts* (Gustav Fisher 1971) 110; Hans Kreller, *Römisches Recht. II. Grundlehren des Gemeinen Rechts. Romanistische Einführung in das Geltende Privatrecht* (Springer 1950) 157; Erich Genzmer, 'Pondere, Numero, Mensura' (1952) 1 *Archives d'Histoire du Droit Oriental et la Revue Internationale des Droits de l'Antiquité* 471-472.

[92] Von Savigny (n 91) 142.

[93] Biondo Biondi, 'Cosa fungibile e non fungibile' (1968) IV *Novissimo Digesto Italiano* 1019-1021.

individual characteristics of the item take precedence (e.g., a slave, a house, or a used car today). In non-fungible goods, one item cannot substitute for another. The distinction between fungible and non-fungible things is primarily significant in the field of contract law. For example, a loan contract (*mutuum*) can only be concluded for fungible things.[94]

The term "quantity", encountered in the definition of the German Code (§ 91), falls far short of conveying the legal notion of a fungible thing. Fungible things are certainly replaceable, but the legal idea of fungibility is not encapsulated in the term "quantity". Similarly, the traditional terminology, which speaks of fungible, representable, or substitutable things, does not encompass the legal notion either. Fungible things can certainly be replaced, but this is not the essential and primary connotation of the legal concept; for instance, a jewel or a garment can be replaced with another of the same kind, as they serve the same function. Rather, substitutability is a consequence of the recognition that fungible things are identical. The legal notion of a fungible thing is precisely derived from economic and social identity, from which the concept of substitutability arises. In strict terms, one should speak of things that are legally identical, as they fall within a specific category. However, the term "fungible thing" has become so deeply ingrained in scientific and legislative language that it would neither be useful nor appropriate to replace it.[95]

Fungibility should not be equated with equivalence. Equivalence, as the same phrase indicates, entails a purely economic consideration, namely the relationship between thing and value. This, in itself, remains extraneous to the legal notion of fungibility, which entails the identity of things falling within a specific category. Naturally, fungible things, being identical, are also equivalent; if a measure of grain is identical to another measure of the same grain, the two measures will have the same value. However, not all equivalent or functionally similar things are fungible: a diamond may have the same value as a pearl, a lamp may have the same function and value as another, but such things are certainly not fungible, as it is not indifferent in social evaluation to possess a diamond rather than a pearl, or one lamp rather than another.[96]

Fungibility is a particular quality of certain categories of things, derived from common and general social considerations. Therefore, the determination of this quality is beyond individual assessment. Wheat, wine, and currency are certainly fungible things, precisely because they are socially regarded as such. Private autonomy cannot make things fungible that are not socially fungible, nor can it consider something as non-fungible that is socially fungible, provided it is not considered in its normal function; for instance, lending coins, despite coins being fungible, may not be possible if the coins are not considered as such, i.e., destined for a specific use other than their normal function, such as spending and circulation.[97]

The notion of a fungible thing is significant from various perspectives and is explicitly contemplated by the law several times. The legislative paradigm is money; often it is said to include money and other fungible things, and it is precisely from these provisions and the function that this qualification has in them that the doctrine derives the notion of fungible thing.

According to the prevailing doctrine, fungibility is an objective fact: things that can be replaced by others with the same structural and functional characteristics are considered fungible. Furthermore, since only things belonging to the same category have the same characteristics, fungibility tends to be resolved in the

[94] Gai. I. 3.90: "*Re contrahitur obligatio uelut mutui datione; mutui autem datio proprie in his fere rebus contingit, quae res pondere, numero, mensura constant, qualis est pecunia numerata, uinum, oleum, frumentum, aes, argentum, aurum; quas res aut numerando aut metiendo aut pendendo in hoc damus, ut accipientium fiant et quandoque nobis non eaedem, sed aliae eiusdem naturae reddantur. unde etiam mutuum appellatum est, quia quod ita tibi a me datum est, ex meo tuum fit*". Belgin Erdoğmuş, *Roma Eşya Hukuku* (Der Yayınları 2018) 9.

[95] Biondi (n 93) 1020.

[96] Biondi (n 93) 1020.

[97] Biondi (n 93) 1020.

concept of belonging to a *genus*.[98] Therefore, to say that a legal relationship has fungible things as its object means that they are relevant not in their specific individuality, but rather in their belonging to a category, within which there is full substitutability among the individual elements.[99]

On the contrary, ZARRELLI cited in his work, while acknowledging their connection, contests that the two concepts—fungibility and genericity—could coincide. According to ZARRELLI, one concept relates to the dynamic moment of the obligation, as it indicates the possibility of fulfilling it by providing either one thing or another indifferently. On the other hand, the other concept is placed on a static level, as it implies that the object of the obligation is identified solely with reference to the category to which it belongs.[100] With reference to restitutionary obligations, the author states that "there is therefore no fungibility among all things belonging to the due *genus*, but only among those of the same quality as those previously received by the debtor: only these can constitute the object of performance, being suitable to satisfy the creditor's interest."[101]

GAMBARO also strongly criticises the overlap between these two categories in his work, stating that fungibility is a predicate of the asset, allowing us to distinguish between fungible and non-fungible things, while the concept of genericity represents a logical means to designate the object of the contract by indicating a class of things.[102] Generic things, in themselves, do not exist in the physical world. Notably, as highlighted by the author, Roman sources do not speak of generic things but of "*genus in obligatione deductum*."[103]

The concept of "*genus*" is the complex, more or less extensive set of objects linked by certain common qualities, which constitute the nature or substance of the group itself. More precisely, "*genus*" is the complex that encompasses within itself several groups of similar objects, and in this sense, it contrasts with "*species*", which is a group not further divisible into other groups but into individual entities. Undoubtedly, the Roman legal concept draws inspiration from the notion of *genus*, although the two do not perfectly coincide. The Roman jurists, in fact, resorted to the concept of *genus* solely for identifying the object of the legal relationship. In this context, "*genus*" was juxtaposed with "*species*" in a somewhat different sense. The jurist speaks of generic determination when the object of the relationship was indicated through the category to which it belonged, and of specific determination when the object of the relationship was indicated in its individuality. In this legal sense, the concept of *genus* also came to encompass the *species* of logic. However, legally, the term "*species*" refers to an entirely different concept, namely the individual thing.[104]

[98] However, it should be pointed out that the attempt at distinction drawn by those who have opposed the objective nature of fungibility to the inherently subjective nature of classification leads to the identification of a category. Biondi (n 93) 1019-1021; Ugo Majello, 'L'individuazione nella Vendita di Genere' (1957) *Rivista di Diritto Civile* 181 ff.

[99] Restivo (n 89) 395.

[100] Antonio Zarelli, *Fungibilità ed Infungibilità nell'Obbligazione* (Jovene 1969) 83-90.

[101] Zarelli (n 100) 88-89. Furthermore, it is simplistic to assert that there is a necessary and unconditional equivalence among things of the same *genus*. Article 1178 of the Civil Code, which states that in generic obligations the debtor must provide things of not lower quality than the average, constitutes the normative recognition of the differences that exist between things of the same *genus* and their relevance. Articles 1782 and 1813 of the Civil Code further confirm the possibility of these differences. These provisions, concerning irregular deposits and loans, specify that the object of the restitutionary obligation should be things "of the same species and quality as those received". This demonstrates that belonging to the same *genus* is not sufficient to imply unconditional fungibility. Restivo (n 89) 396.

[102] Antonio Gambaro, 'I beni' in Antonio Cicu, Francesco Messineo, Luigi Mengoni and Piero Schlesinger (eds), *Trattato di Diritto Civile e Commerciale* (Giuffrè 2012) 156-158.

[103] Gambaro (n 102)156-158.

[104] Paolo Maddalena, 'Genus (Diritto Romano)' (1957) VII *Novissimo Digesto Italiano* 796-798. Numerous examples can be found in the sources where things in certain relationships are determined through the indication of the *genus*: "*Qui hominem generatim promisit*" (D. 12.6.32.3. *Iulianus libro decimo digestorum*); "*Homine generaliter legato*" (D. 33.5.2.1. *Ulpianus libro 20 ad Sabinum*); "*Legato generaliter relicto*" (D. 30.37.pr. *Ulpianus libro 21 ad Sabinum*); "*Cum hominem generaliter stipulor out lancem out quodlibet vas*" (D. 45.1.2.1. *Paulus libro 12 ad Sabinum*); "*Vini autem non speciem, sed genus stipulari videmur*" (D. 45.1.83.5. *Iulianus libro 22 digestorum*); "*In stipulationibus alias species, alias genera deducuntur*" (D. 45.1.54.pr. *Iulianus libro 22 digestorum*).

As is evident, the texts confine the antithesis between *genus* and *species* to the realm of rights of obligation. This is because it was clear to the Romans that the right in rem, as a direct and immediate power over a thing, is only conceivable if exercised over a specific object upon which it can currently operate. Thus, "If anyone claims something in rem, he must designate the thing, and whether he demands the whole or a part and how much of it: for the appellation of the thing signifies not *genus* but *species*" (D. 6.1.6.pr. *Paulus libro sexto ad edictum*). It became evident, therefore, that the distinction between *genus* and *species* must be regarded as independent from that between fungible and non-fungible things. The latter pertains to the nature of the thing and is inspired by an objective economic criterion (fungible things are those that, according to common economic standards, are considered mutually replaceable, such that they can stand in for each other in payments: "*quae pondere numero mensura consistunt*" [those which have weight, number, or measure]). In contrast, the former, as mentioned, represents a modality of the bond. The conflation of these two distinctions resulted from an error made by ZASIUS[105], who read in D. 12.1.2.1 (*Paulus libro 28 ad edictum*) that fungible things "*in genere suo functionem recipiunt*"; however, this interpretation was certainly unknown to the Romans. They explicitly stated: "...if one reads *'petunia quae in area est*,' or '*vinum quod in apothecis est*' it must be said that the clause ceases, since we have stated that whenever *species* is read, we say '*cessare*" (D. 30.30.6. *Ulpianus libro 19 ad Sabinum*). Furthermore, they remarked: "but with specific items left out, I will provide money which is in those chests, wine which is in those casks, silver which I have in those storerooms" (D. 35.2.30.4. *Maecianus libro octavo fideicommissorum*).[106]

In fact, one often finds a coincidence between fungible items and *genus* on one hand, and non-fungible items and *species* on the other. However, this does not exclude the clear conceptual distinction between the two distinctions. It suffices to consider that since the distinction between *genus* and *species* is determined by the volitional position of the subject, in obligational relationships, fungible items can be specifically determined, while non-fungible items can also be indicated under the *genus*. Similar considerations apply to the identification between *genus* and incorporeal things, which traces back to an ancient doctrine. Note that *the genus* does not constitute the object of the obligation; rather, as previously mentioned, it serves for the identification of the thing.[107]

It is worth examining the decision to associate the fungibility of a thing with its classification within a *genus*. The extent of a genus depends on the characteristics adopted as criteria for its identification, which may vary with the context. The more specific the criteria employed, the narrower the range of objects encompassed by the *genus*. Note that the process of constructing a *genus* is characterised by its flexibility and relativity, which render the membership within it a precarious matter. Consequently, it would be methodologically unsound to draw arguments regarding the fungibility of a good solely based on its affiliation to a particular *genus*.[108]

Indeed, even among proponents of this objective conception of fungibility, there are those who observe that reference should not be made to the physical characteristics of the object, but rather to how it is considered in the economic-social dimension.[109] On the other hand, as ASTUTI points out,[110] even in the Roman legal tradition, the distinctions of things "are seemingly naturalistic, but in reality based on

[105] Zasius (n 91) 17-18.

[106] Maddalena (n 104) 796-798.

[107] Maddalena (n 104) 796-798.

[108] Zarelli (n 100) 52, 80. Can Chianti and Barolo be considered fungible simply because they are both wines? Furthermore, can two bottles of Chianti from different vintages be considered fungible? Restivo (n 79) 396, fn.16.

[109] Filippo Vasalli, 'Individuazione e Fungibilità delle Cose' (1960) III (2) *Studi Giuridici* 640; Federico De Martino, 'Infungibilità del Motore di Aereomobile' (1949) X(2) *Rivista del Diritto Delle Navigazione* 250 ff.

[110] Guido Astuti, 'Cosa (storia)' (1962) XI *Enciclopedia del Diritto* 11.

economic-social criteria". This relativises the notion of fungibility and introduces an evaluative element into it, albeit characterised by typicality.[111]

Above all, the notion that fungibility is relevant in objective terms stems from the assumption that it is a predicate attributable to the thing itself, considered independently of the concreteness of the legal relationships of which it is the object from time to time. However, the validity of this assumption is questionable. From this preliminary observation, two implications can be inferred. First, it becomes evident that the concept of fungibility entails a relationship between two or more things. Second, it can be deduced that fungibility is a characteristic that can be attributed not to the thing in itself, but rather to the manner in which it is regarded as an object within a legal relationship, as well as its capacity to fulfil the deduced interest.[112]

The fungibility of things is contingent on their equal capacity to fulfil a particular interest. However, this interest is inherently tied to the specific context of a legal relationship, where the parties involved play a crucial role in shaping and defining the nature of that interest. It is through their deliberate actions and decisions that the concept of fungibility becomes applicable to the goods in question. Therefore, attributing fungibility to a thing as an object of a legal relationship recognises the fact that its fungible nature is subject to the volition of the parties involved. It is the interest of the parties that renders the thing fungible or non-fungible.[113]

The matter can be approached from alternative perspectives, as it essentially revolves around the choice between two conceptions—an objective and a subjective one—of fungibility. According to the prevailing first conception, parties cannot deem items fungible if they lack identical structural and functional attributes, as fungibility is an objective quality of the asset.[114] Conversely, the second conception posits that the determination of fungibility rests within the realm of private autonomy.[115] According to GALASSO,[116] "*the fungibility of things is the result of an equivalence judgement based on the objective assessment of the physical or economic attributes of things belonging to the same genus. On the other hand, the parties are free to expand or reduce the scope of the genus, within the limits of the identity of the said characteristics.*" This latter clarification significantly narrows the scope of the premise: it is not by chance that GALASSO states that the parties can "consider non-fungible things as fungible in the common social appreciation", but does not add that they can also consider fungible things as non-fungible in the common social appreciation.[117]

[111] Restivo (n 89) 395, fn. 13.

[112] In a strict sense, the assertion of fungibility in relation to a thing lacks logical meaning unless the complementary term with which fungibility is posited is specified. The usage of the term "fungible things" without additional elaboration is employed for conciseness and brevity. Restivo (n 89) 397.

[113] Zarelli (n 100) 50-63; Gambaro (n 102)156. One verse asserts that "fungibility operates as an objective quality of things and produces its effects regardless of the parties' intentions. "Acts of private autonomy... cannot attribute fungible quality to a non-fungible object, or vice versa." However, it further adds that "fungibility should not be confused with the mode of designation of the contract object: this depends on the parties' will". It is "generally accepted" that fungibility does not solely pertain to the nature of things but also depends on how they are considered by the parties. Restivo (n 89) 398, fn. 22.

[114] Biondo Biondi, 'I Beni' in Filippo Vasalli (ed), *Trattato di Diritto Civile Italiano*, vol IV(1) (Unione Tipografico-Editrice Torinese 1954) 48; Majello (n 98) 182.

[115] Zarelli (n 100) 50-63; Gambaro (n 102) 151 ff. The notion that the qualification of a good depends on its objective characteristics until a different assessment by the parties arises is challenged -methodologically- by Zarelli (n 90) 29-34. According to ZARELLI, the predominance of the parties' will, presented as an exception to the rule, namely an objective conception of fungibility, actually renders this rule irrelevant by identifying private autonomy as the ultimate and decisive criterion of qualification. Therefore, there is a logical aporia in attempting to maintain a fixed notion of objective fungibility while simultaneously overlaying it with potentially divergent indications arising from the title of the relationship: these two terms are irreconcilable. This aporia can only be overcome by eliding the dualism between the reference to the objective characteristics of the good and the reference to the parties' will.

[116] Antonio Galasso, 'Il comodato' in Antonio Cicu, Francesco Messineo, Luigi Mengoni and Piero Schlesinger (eds), *Trattato di Diritto Civile e Commerciale* (Giuffrè 2004) 262, fn. 6.

[117] Galasso (no 116) 262, fn. 6. According to GAMBARO, the qualification of a good depends on the will of the contracting parties, who "can consider goods as fungible that are not commonly considered as such, and vice versa". However, GAMBARO, points out that most of the time, the parties do not regulate all aspects of the relationship and, among them, they do not specify whether the good has been designated as fungible or non-

The objective conception, according to which fungibility is a predicate imposed by the objective nature of the thing, betrays a certain confusion between the realm of fact and the realm of norm. Fungibility and infungibility, as legal qualifications, exist within the dimension of the norm.[118] In this dimension, the thing itself does not exist, but rather its representation; and this representation constitutes the outcome of a logical process of assuming a given material within the contractual situation, for which private autonomy is the architect, having the exclusive competence to construct the functional rule for the realisation of the pursued set of interests; particularly, it is their task to determine whether two things, beyond their differences, are equally capable of satisfying the deduced interest.[119] In this sense, how the thing is represented in the rule of the relationship is decisive.

On the other hand, it is unanimously accepted that the parties may consider a thing as non-fungible, even if it appears substitutable on the objective level: the value of use is also linked to non-patrimonial interests of a subjective nature. This further demonstrates that the concepts of fungibility and infungibility exist within a normative dimension and are not mechanically determined by the characteristics that the thing presents in fact.[120]

VI. Conclusion: The Enduring Legacy of Roman Legal Concepts in Modern Property Law

The study of fungibility and corporeality in Roman property law provides a valuable historical and conceptual foundation for contemporary debates on digital assets, particularly non-fungible tokens (NFTs). While modern legal frameworks grapple with the classification of digital property, Roman law's distinctions between *res fungibiles* (fungible things) and *res nec fungibiles* (non-fungible things), as well as its treatment of corporeal and incorporeal property, continue to offer relevant insights into the nature of ownership, transferability, and legal identification of assets.

One of the central themes in this study is how Roman jurists conceptualised materiality and interchangeability, which in turn shaped legal doctrines regarding possession, ownership, and risk allocation. The classification of fungible goods as those determined by weight, number, or measure, and non-fungible goods as unique and individually identifiable was not merely a practical distinction but had significant legal consequences, particularly in obligations and contractual relationships. This distinction remains highly relevant today, as legal scholars and courts attempt to define the legal status of digital property and the proprietary rights associated with NFTs.

fungible in the contract. In such cases, reference must be made to the customary practices—both normative and negotiated—which obviously "highlight the objective qualities of the good… because if these qualities were not objective, a general consensus on how to recognise or value them could not be formed". This is why the distinction between the objective and subjective conception of fungibility, which is clear and extensive in conceptual terms, tends to fade in contractual practice, where the pervasiveness of customary practices, fuelled by the frequent incompleteness of contracts, becomes a vehicle for the predominance of a notion of fungibility based on the physical characteristics of the good, albeit mediated by socially typical evaluations. Gambaro (n 102) 151-155.

[118] GALASSO, in his work, defines them as "normative concepts derived from the objectification of behaviours that has become practice". Galasso (no 116) 262, fn. 6.

[119] Upon closer examination, the fact that two goods are fungible does not mean that they are identical: there are always small differences between two items of the same series; the quality of a food product depends on the peculiarities of the soil in which it was produced. However, "most of the time, the difference does not matter to the parties, who consider any specimen of the type suitable for satisfying the practical need that gave rise to the transaction". This demonstrates that the existence of a fungibility relationship between two goods is always filtered through the evaluation of the parties. Francesco Messineo, *Manuale di Diritto Civile e Commerciale, Introduzione, Dottrine Generali*, vol 1 (Giuffrè 1957) 397. It is significant, from this perspective, that Galasso (no 116) 264, fn. 10, following PUGLIATTI, finds it appropriate to resort to the concept of equivalence in order to explain the normative aspect of fungibility: two goods can be considered fungible, despite not being and not being able to be identical, based on a judgement of equivalence. Salvatore Pugliatti, *Beni e Cose in Senso Giuridico* (Giuffrè 1962) 213.

[120] Restivo (n 89) 400.

Furthermore, the Roman legal tradition's treatment of corporeality, distinguishing between things that can be physically touched (*res corporales*) and those that exist only as legal constructs (*res incorporales*), highlights the historical challenges of defining intangible assets. The strict materiality requirement in property law in many modern legal systems, including German and Swiss law, demonstrates a continued reliance on classical Roman legal thought. However, as NFTs and other digital assets continue to challenge traditional legal categories, there is increasing recognition of the need to rethink the role of incorporeal property in the legal framework.

In addition, the evolution of digital ownership models and the concept of blockchain-based property rights reflect ongoing tensions between the economic and legal definitions of fungibility. Roman law's emphasis on the social and economic perception of fungibility, rather than purely physical attributes, suggests that the legal recognition of NFTs and similar assets should be based not only on their technical structure but also on their functional role within economic transactions.

Ultimately, this study argues that Roman legal concepts remain deeply relevant for contemporary legal discussions on digital and intangible assets. By re-examining the Roman principles of fungibility, corporeality, and identification, legal scholars and policymakers can develop more coherent frameworks for digital property classification. While modern technologies continue to evolve, the core legal questions surrounding ownership, transferability, and property rights remain deeply rooted in the intellectual traditions of Roman law.

Thus, the historical perspective offered by Roman legal thought is not merely an academic exercise but a crucial lens through which contemporary property law can be analysed and adapted. As legal systems strive to incorporate blockchain technology, smart contracts, and digital property rights, the lessons of Roman law provide a theoretical foundation that can guide the development of emerging legal frameworks in an increasingly digital world.

Peer Review Externally peer-reviewed.
Conflict of Interest The author has no conflict of interest to declare.
Grant Support The author declared that this study has received no financial support.

Author Details İpek Sevda Söğüt (Assoc. Prof. Dr.)
[1] Ozyegin University Faculty of Law, Department of Roman Law, İstanbul, Türkiye
0000-0002-3501-6593 ipek.sogut@ozyegin.edu.tr

Bibliography

Aksoy Dursun, Sanem, *Eşya Kavramı* (Oniki Levha Yayınevi 2012).

Allen, Jason G., 'Property in Digital Coins' (2019) 8(1) *European Property Law Journal* 64.

Alma Mater Studiorum Università di Bologna, 'Famous People and Students, Accursius (Accursio)' (2024) https://www.unibo.it/en/university/who-we-are/our-history/famous-people-and-students/Accursius accessed 4 February 2025.

Artz, Markus, 'Viel Neues im BGB-Verträge über digitale Produkte und neues Kaufrecht' (2022) Zeitschrift für das Juristische Studium http://www.zjs-online.com accessed 3 February 2025.

Astuti, Guido, 'Cosa (storia)' (1962) XI *Enciclopedia del Diritto* 11.

Baldus, Christian, 'Res Incorporales im Römischen Recht' in Leible, Stefan, Lehmann, Matthias and Zech, Herbert (eds), *Unkörperliche Güter im Zivilrecht* (Mohr Siebeck 2011) 7-31.

Becker, Christoph, *Die "res" bei Gaius – Vorstufe einer Systembildung in der Kodifikation? Zum Begriff des Gegenstandes im Zivilrecht* (Heymanns 1999).

Beeple, *Everydays: The First 5000 Days*, Christie's (2021) https://onlineonly.christies.com/s/beeple-first-5000-days/beeple-b-1981-1/112924 accessed 3 February 2025.

Behrends, Okko, Knutel, Rolf, Kupisch, Berthold and Seiler, Hans Hermann, *Corpus Iuris Civilis, Teil 1: Institutionen* (4th edn, CF Müller 1997).

Benke, Nikolaus and Meissel, Franz-Stefan, *Übungsbuch zum Römischen Sachenrecht* (12th edn, Manz Verlag 1990).

Biondi Biondo, 'I Beni' in Vasalli, Filippo (ed), *Trattato di Diritto Civile Italiano*, vol IV (1) (Unione Tipografico-Editrice Torinese 1954) 48.

Biondi, Biondo, 'Cosa fungibile e non fungibile' (1968) IV *Novissimo Digesto Italiano* 1019-1021.

Birks, Peter and McLeod, Grant, *Justinian's Institutes* (Cornell University Press 2001).

Bonfante, Pietro, *Corso di Diritto Romano, La Propriete*, vol II (Giuffrè Editore 1966).

Brutti, Massimo, *Il Diritto Privato Nell'Antica Roma* (3rd edn, Giappichelli 1941).

Bürgerliches Gesetzbuch (German Civil Code, promulgated 24 August 1896) https://www.gesetze-im-internet.de/englisch_bgb/ accessed 3 February 2025.

Calasso, Francesco (ed), *Cosa (Storia)* in *Enciclopedia Del Diritto*, XI-Cosa-Delib (Giuffrè Editore 1962).

David, Martin G and Nelson, Hein Leopold Wilhelmus, *Gai Institutionum Commentarii IV mit Philologischem Kommentar Herausgegeben* (Brill, 1960).

De Martino, Federico, 'Infungibilità del Motore di Aereomobile' (1949) X(2) *Rivista del Diritto Delle Navigazione* 250.

De Mattei, Shanti Escalante, 'Has Been the Year of the NFT. But What Exactly Is an NFT?' (2019) https://www.artnews.com/art-news/news/nft-guide-1234614447/ accessed 3 February 2025.

De Zulueta, Francis, *The Institutes of Gaius, Part II Commentary* (Clarendon Press 1953).

Der Bundesrat, *Bericht des Bundesrates: Rechtliche Grundlagen für Distributed Ledger-Technologie und Blockchain in der Schweiz* (2023) https://www.newsd.admin.ch/newsd/message/attachments/55150.pdf accessed 3 February 2025.

Dernburg, Heinrich, *Pandekten*, vol 1 (6th edn, H W Müller 1903)

Domingo, Rafael, 'The Law of Property in Ancient Roman Law' (2017) SSRN Electronic Journal 1.

Dowling, Michael, 'Fertile LAND: Pricing Non-Fungible Tokens' (2022) 44 *Finance Research Letters* 1.

Ercan, Cannur and Ünlen, Gökhan 'Dijital Ürünlerin Eşya Niteliğine Disiplinlerarası Bir Bakış' (2024) 73(2) *Ankara Üniversitesi Hukuk Fakültesi Dergisi* 1159.

Erdoğmuş, Belgin, *Roma Eşya Hukuku* (Der Yayınları 2018).

Fairfield, Joshua A.T., 'Tokenized: The Law of Non-Fungible Tokens and Unique Digital Property' (2022) 97(4) *Indiana Law Journal* 1261.

Filorinali, Kardelen, *Fikir ve Sanat Eserleri Hukuku Açısından NFT'ler* (Seçkin Yayınevi 2023).

Galasso, Antonio, 'Il comodato' in Cicu, Antonio, Messineo, Francesco, Mengoni, Luigi and Schlesinger, Piero (eds), *Trattato di Diritto Civile e Commerciale* (Giuffrè 2004) 1.

Gambaro, Antonio, 'I beni' in Cicu, Antonio, Messineo, Francesco, Mengoni, Luigi and Schlesinger, Piero (eds), *Trattato di Diritto Civile e Commerciale* (Giuffrè 2012) 1.

Garbers-von Boehm, Katharina, Haag, Helena and Gruber, Katharina, *Intellectual Property Rights and Distributed Ledger Technology with a Focus on Art NFTs and Tokenized Physical Artworks*, The European Parliament's Policy Department for Citizens' Rights and Constitutional Affairs, Committee on Civil Legal Affairs (JURI), (European Union 2022).

Garcia, Rosa M. and Simón-Moreno, Hector, 'The Digital Tokenization of Property Rights: A Comparative Perspective' (2021) 41 *Computer Law & Security Review* 1.

Genzmer, Erich, 'Pondere, Numero, Mensura' (1952) 1 *Archives d'Histoire du Droit Oriental et la Revue Internationale des Droits de l'Antiquité* 469.

Ghiretti, Paolo, 'Genericità e Fungibilità nell'Obbligazione' (1974) 1 *Rivista del Diritto Commerciale e del Diritto Generale delle Obbligazioni* 257.

Goppert, Heinrich Robert, 'Der Ursprung der Eintheilung der corpora in I. 30. D. de usurp. 41, 3' in Goppert, Heinrich Robert (ed), *Über Einheitliche, Zusammengesetzte und Gesammt-Sachen Nach Römischen Recht* (Studia Juridica 1970) 8-19.

Gordon, William M, and Robinson, Olivia F., *The Institutes of Gaius* (Cornell University Press 2001).

Grunberger, Michael, 'Verträge über digitale Güter' (2018) 218(2) *Archiv für die civilistische Praxis* 213.

Heumann, Hermann and Seckel, Gottlieb, *Handlexikon zu den Quellen des Römischen Rechts* (Gustav Fisher 1971).

Hoop, Gerold, *Kodifikationsgeschichtliche Zusammenhänge des Abtretungsverbots* (Duncker & Humblot, 2022).

Howcroft, Elizabeth, 'Twitter Boss Jack Dorsey's First Tweet Sold for $2.9 Million as an NFT' (2019) https://www.reuters.com/article/us-twitter-dorsey-nft-idUSKBN2BE2KJ accessed 3 February 2025.

Huchthausen, Liselotte, 'Gaius Institutionen' in Huchthausen, Liselotte and Gottfried, Herder (eds), *Römisches Recht* (Aufbau Verlag, 1991).

Idelberger, Florian and Mezei, Peter, 'Non-Fungible Tokens' (2022) 11(2) *Internet Policy Review* 1.

Kaser, Max, 'V. Gaius und die Klassiker' (1953) 70(1) *Zeitschrift der Savigny-Stiftung für Rechtsgeschichte: Romanistische Abteilung* 127.

Kaulartz, Marcus and Schmid, Alexander, 'Rechtliche Aspekte sogenannter Non-Fungible Tokens (NFTs)' *Compliance-Berater* 8 (Druck und Verlag 2021) 298-302.

Koch, Philipp, 'Die "Tokenisierung" von Rechtspositionen als digitale Verbriefung' (2018) 30(6) *Zeitschrift für Bankrecht und Bankwirtschaft (ZBB/JBB)* 359.

Kreller, Hans, 'Res als Zentralbegriff des Institutionensystems' (1948) 66(1) *Zeitschrift der Savigny-Stiftung für Rechtsgeschichte: Romanistische Abteilung* 572.

Kreller, Hans, *Römisches Recht. II. Grundlehren des Gemeinen Rechts. Romanistische Einführung in das Geltende Privatrecht* (Springer 1950).

Kulakova, Olga S, 'Digital Art in Light of NFT: Market Power and Legal Uncertainty' (2022) 3(2) *Digital Law Journal* 36.

Kumar, Medhansh, 'Million Dollar Meme: Non-Fungible Tokens and Their Regulation' (2022) https://www.scconline.com/blog/post/2022/01/12/non-fungible-tokens-and-their-regulation/ accessed 3 February 2025.

Lammeyer, Joseph, *Die Institutionen des Gaius* (Ferdinand Schöningh, 1929).

Lehmann, Matthias and Krysa, Felix, 'Blockchain, Smart Contracts und Token aus der Sicht des (Internationale) Privatrechts' (2019) 2 *Bonner Rechts Journal* 90.

Maddalena, Paolo, 'Genus (Diritto Romano)' (1957) VII *Novissimo Digesto Italiano* 796-798.

Majello, Ugo, 'L'individuazione nella Vendita di Genere' (1957) *Rivista di Diritto Civile* 181.

Marinotti, Joao, 'Tangibility as Technology' (2021) 37(3) *Georgia State University Law Review* 671.

Merrill, Thomas W., 'Ownership and Possession' in Chang, Yun Chien (ed), *Law and Economics of Possession* (Cambridge University Press 2015) 9-39.

Messineo, Francesco, *Manuale di Diritto Civile e Commerciale, Introduzione, Dottrine Generali*, vol 1 (Giuffrè 1957).

Oertmann, Paul, *Die Volkswirtschaftslehre des Corpus Juris Civilis* (Kessinger Publishing 1891).

Özkan Taş, Rabia, *Dijital Varlıklar Üzerindeki Hakkın Hukuki Niteliği* (Oniki Levha Yayınevi 2025).

Öztürk, Sevgi Ayşe, 'Yeni Bir Dijital Varlık Olarak NFT: Pazarlama Dünyasındaki Yeri Üzerine Değerlendirmeler' (2022) 22(4) *Anadolu Üniversitesi Sosyal Bilimler Dergisi* 1151.

Pfluger, Heinrich Hackfeld, 'Über Körperliche und Unkörperliche Sachen' (1947) 65(1) *Zeitschrift der Savigny-Stiftung für Rechtsgeschichte: Romanistische Abteilung* 339.

Pichonnaz, Pascal, 'Le Concept de Maîtrise Exclusive des Données Numériques: Quelques Réflexions Discursives' (2021) 140(4) *Revue de droit suisse* 427.

Poste, Edward, *Gai Institutiones or Institutes of Roman Law*, Book II, 'Equal Rights (De Rebus)' (Oxford, 1904) https://droitromain.univ-grenoble-alpes.fr/Anglica/gai2_Poste.htm#10 accessed 3 February 2025.

Pugliatti, Salvatore, *Beni e Cose in Senso Giuridico* (Giuffrè 1962).

Restivo, Carmelo 'La Fungibilità dell'Oggetto Del Mutuo' (2012) 10 *Rivista di Diritto dell'Economia, dei Trasporti e dell'Ambiente* 391.

Salehian, Armin, 'Digitale Produkte als Hybride Rechtsobjekte' in Weber, Beatrix (ed), *Hofer Akademische Schriften zum Recht in Nachhaltigkeit, Compliance und IT*, vol 1 (Druck und Verlag 2023) 1-80.

Schmidt-Kessel, Martin, 'Verträge über digitale Inhalte – Einordnung und Verbraucherschutz' (2014) (7-8) *Kommunikation & Recht* 475.

Schulz, Fritz, *Principles of Roman Law* (Clarendon Press 1956).

Scott, Samuel P., *The Enactments of Justinian. The Digest or Pandects* in *The Civil Law*, Cincinnati (1932) https://droitromain.univ-grenoble-alpes.fr/Anglica/D41_Scott.htm#III accessed 3 February 2025.

Swiss Civil Code (Switzerland, adopted 10 December 1907, status as of 23 January 2023) https://fedlex.data.admin.ch/filestore/fedlex.data.admin.ch/eli/cc/24/233_245_233/20230123/en/pdf-a/fedlex-data-admin-ch-eli-cc-24-233_245_233-20230123-en-pdf-a-2.pdf accessed 3 February 2025.

Tekelioğlu, Numan, 'Eşya Kavramını Yeniden Düşünmek: NFT'lerin Eşya Niteliği ve Eşya Hukuku Bakımından Geleceği Üzerine Bir İnceleme' (2022) 34 (1) *Selçuk Üniversitesi Hukuk Fakültesi Dergisi* 1301.

The Economist, 'Why We Are Selling Our Cover as an NFT: How We Set It Up And Decided It Was Worth Doing' (2021) https://www.economist.com/the-economist-explains/2021/10/21/why-we-are-selling-our-cover-as-an-nft accessed 3 February 2025.

Toygar, Alp, Taiper, Rohm Jr. C.E. and Zhu, Jake, 'A New Asset Type: Digital Assets' (2013) 22(4) *Journal of International Technology and Information Management* 113.

Treiblmaier, Horst, 'The Token Economy as a Key Driver for Tourism: Entering the Next Phase of Blockchain Research' (2021) 91 *Annals of Tourism Research* 1.

Vasalli, Filippo, 'Individuazione e Fungibilità delle Cose' (1960) III(2) *Studi Giuridici* 640.

Vicente, Dário Moura, 'Unkörperliche Güter im Romanischen Rechtskreis' in Leible, Stefan,

Lehmann, Matthias and Zech, Herbert (eds), *Unkörperliche Güter im Zivilrecht* (Mohr Siebeck, 2011) 75-93.

Von Jhering, Rudolph, *Geist des Römischen Rechts auf den Verschiedenen Stufen Seiner Entwicklung* (Breitkopf und Härtel 1865).

Von Savigny Friedrich Carl, *System des Heutigen Römischen Rechts*, vol 1 (Veit 1840).

Von Savigny, Friedrich Karl, *von Savigny's Treatise on Possession: Or the Jus Possessionis of the Civil Law* (6th edn., Hyperion Press 1979).

Watson, Alan, *The Law of Property in the Later Roman Republic* (Clarendon Press 1984).

Wendland, Matthias, 'Sonderprivatrecht für digitale Güter' (2019) 118 *Zeitschrift für Vergleichende Rechtswissenschaft* 191.

Wilson, Kathleen Bridget, Karg, Adam and Ghaderi, Hadi, 'Prospecting Non-Fungible Tokens in the Digital Economy: Stakeholders and Ecosystem, Risk and Opportunity' (2022) 65(5) *Business Horizons* 657.

Windscheid, Bernhard, *Lehrbuch des Pandektenrechts* (Verlag von Ebner & Seubert 1879).

Zarelli, Antonio, *Fungibilità ed Infungibilità nell'Obbligazione* (Jovene 1969).

Zasius, Ulrich, *In Titulum Institutionum De Actionibus Enarratio* (Vincentius 1571).