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On the Categorized Regulation of Virtual Property

Liwei Luo

Institute for Advanced Studies in Humanities and Social Sciences, Beihang University, Beijing, China
Yuandongdexun@qq.com

Abstract. For its significant social and economic value, virtual property has triggered urgent demands for dedicated legislative regulation in recent years. However, the current legal protection system for virtual property still suffers from numerous critical deficiencies, which mainly include a lack of theoretical consensus among scholars, obvious legislative gaps in positive law, and chaotic judicial practices in handling relevant disputes. To effectively tackle these thorny problems, existing regulatory approaches can be categorized into three major types: the Doctrine of Direct Incorporation into Existing Rights, the Doctrine of Referring to and Flexibly Applying Existing Rights Rules, and the Doctrine of Non-Definition of Virtual Property Nature. Given that the extension and practical utilization methods of virtual property vary substantially according to different levels of disposability, this paper proposes classifying virtual property into two distinct categories—high-disposability virtual property and low-disposability virtual property—and then providing targeted characterization and regulatory strategies for each type respectively. This categorized approach is expected to fundamentally resolve the existing predicaments and establish a comprehensive, systematic legal protection framework for virtual property.

Keywords: Virtual property, Categorized regulation, Direct Incorporation into Existing Rights

1. Introduction

With the rapid iteration of internet technology and in-depth penetration of the digital economy, a distinctive data-centric asset form—virtual property (VP)—has emerged in cyberspace. It covers entertainment-related assets (game accounts, in-game equipment, virtual currencies) and rights with tangible economic value (social media accounts, online storefronts, digital collectibles). The tension between its virtual form and authentic value has spawned pressing legal issues requiring immediate resolution.

At the legislative level, China's legal framework fails to regulate VP effectively. Article 127 of the Civil Code of the People's Republic of China stipulates that "where laws provide for the protection of data and online virtual property, such provisions shall apply," but this is a principled, declaratory clause that does not clarify core issues including attribute definition, protection scope, right content, and remedy channels. For virtual currencies, the Notice on Further Preventing and Addressing Risks Associated with Virtual Currency Trading and Speculation (2021) classifies

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related activities as illegal financial practices and denies their fiat currency status. However, no dedicated laws, regulations, or judicial interpretations address the legal status, ownership division, or transaction rules of other VP types like in-game equipment and online accounts.

Theoretically, perspectives on VP protection remain fragmented. Doctrines such as the Real Right Theory [1], Creditor's Right Theory [2], Intellectual Property Theory, and New-Type Right Theory [3] all have inherent flaws, contradict one another, and lack universal recognition or practical feasibility.

This legislative and theoretical vacuum has led to severe problems in judicial practice. First, courts hold divergent views on the nature of the same VP type: in Zhou v. Shanghai Lilith Technology Co., Ltd. [4], the court ruled that game equipment ownership belonged to the operator; in contrast, Li v. Bing Company Limited [5] defined such equipment as intangible property rights. Second, ownership determination is ambiguous, especially for game VP. Some courts adopt the Real Right Theory to confirm operator ownership, while some directly cite service agreement clauses to avoid substantive characterization, as seen in Li Hua v. NetEase Computer Systems Co., Ltd. [6]. Third, theoretical divergences hinder remedy system construction. Courts applying the Creditor's Right Theory only freeze accounts or order operators to perform obligations, while those adopting the Real Right Theory allow direct disposal of game accounts, resulting in drastically different remedy intensities [7]. Compensation amount determination also varies: Zhang v. Perfect World (Beijing) Network Technology Co., Ltd. [8] denied loss calculations based on virtual item holdings, while Hou v. Hong [9] determined damages by the actual purchase price of game equipment. Fourth, civil law characterization confusion affects criminal conviction: illegal acquisition of VP is sometimes deemed theft and sometimes the crime of illegally obtaining computer information system data, as shown in the 2010 case adjudicated by Bengbu Intermediate Court [10], where first and second instance rulings reached opposite conclusions.

In summary, VP regulation research must address two core issues: defining the theoretical nature of VP and proposing feasible protection solutions. This paper is structured as follows: first, classify and evaluate existing doctrines by their logical frameworks; second, construct a rational, implementable protection theory through categorized regulation of VP; third, apply the theory to practical scenarios and explore its value in resolving disputes.

2. Review of existing theories on virtual property

Regarding the characterization of virtual property (VP), the academic community has not yet reached a unified consensus. Representative doctrines include the Creditor's Right Theory, Real Right Theory, Intellectual Property Protection Theory, and New-Type Right Theory. From different jurisprudential logics and value standpoints, these perspectives interpret VP's right attribute—each with theoretical support but inherent limitations. This paper sorts out these doctrines to construct a reasonable and operable VP protection theory. Based on viewpoints on VP's nature, the doctrines are divided into three categories: protection based on the Civil Code's existing right system, constructing an independent right type, and pragmatic flexible regulation without rushed characterization.

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2.1. Doctrines on incorporation into the traditional right system and their problems

2.1.1. Views on direct incorporation into existing rights

2.1.1.1. Creditor's right theory

Proponents argue online VP has virtuality, dependency, and limited duration [2], originating from user-operator service contracts and essentially being a "contract-based creditor's right" or "creditor's right certificate." Users rely on VP to request platform services, with the right's object being the operator's "service act" and the obligor limited to the specific operator (relative right) [11]. However, this theory has critical flaws.

First, it confuses VP with the underlying contract. The online service agreement, not VP itself, aligns with creditor's right attributes. VP breaks through contractual relativity, possessing a right of confrontation against third parties—for example, in-game equipment transactions allow third parties to identify ownership at reasonable cost [2]. Second, it fails to address third-party infringement effectively, as identifying and proving third parties in VP disputes is difficult, leaving users without remedies [12]. Third, it conflicts with practical systems: "virtual property insurance" proves VP's independent value beyond service agreements, and positioning VP as creditor's rights limits liability to civil remedies, insufficient to regulate serious infringement [13]. Fourth, it generates "abnormal costs": market value-based loss determination ignores subjective value, leading to inadequate compensation and encouraging malicious private remedies that disrupt transaction order [1].

2.1.1.2. Real right theory

Advocates cite Article 114, Paragraph 2 of the Civil Code, defining real rights as "direct dominion and exclusive enjoyment of a specific thing." VP meets real right object requirements: blockchain ensures specificity, account passwords/private keys enable dominion, and technical encryption guarantees exclusivity. Real right protection provides stronger remedies—"claim for restitution" curbs illegal seizure, and criminal law punishes theft instead of lightly sentenced computer-related crimes [14].

Yet, this theory has drawbacks. First, China's strict principle of numerus clausus of real rights does not stipulate VP as real rights, which cannot be created through customs [15]. Second, it confuses dominion with real rights—dominion includes multiple right types, so VP's dominion only proves it is a dominion right, not a real right [3]. Third, excessive protection increases social costs: user ownership restricts operators' data modification and server shutdown rights, while operator ownership leaves users unable to claim against third parties [12].

2.1.1.3. Intellectual property protection theory

This theory holds VP is an "intellectual achievement" protected by intellectual property. However, most user-generated content in the metaverse is completed under operator-defined parameters, lacking the creativity required for intellectual property [16]. Additionally, intellectual property emphasizes "information monopoly," while VP's value lies in use and transaction—players often share game experiences publicly, showing no monopolistic intent [17]. Thus, most VP (e.g., in-game equipment, social media accounts) does not qualify for intellectual property protection.

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2.1.2. Views on referring to or flexibly applying existing right rules and their defects

2.1.2.1. Quasi-application of the dichotomy of real rights and creditor's rights

"Quasi-application" is a last-resort legal technique for cases with no direct rules. In VP protection, it skips attribute determination and applies real rights or creditor's rights based on "absolute right against the world": decentralized assets with strong dominion use real right rules, while operator-dependent VP uses creditor's right rules. Technical standards like blockchain decentralization assist classification. However, this approach evades the core question of "what is VP" and is not a long-term solution.

2.1.2.2. Categorized theory of virtual property

This theory divides VP into virtual property creditor's rights and real rights, applying corresponding rules [15]. It constructs a VP right system referencing real rights but has flaws: misclassifying VP as creditor's rights confuses contracts with VP, and there is no clear classification standard—enumeration fails to cover all types, while generalization causes overlapping extensions [18]. The fragmented system inherits defects of both Real Right and Creditor's Right Theories.

2.2. Doctrines on constructing new-type right models

2.2.1. New-type right theory

Some scholars advocate creating a new right type (e.g., formulating a "Virtual Property Rights Law"). Foreign examples include France's 2019 regulation of digital assets [19], but this is impractical in China: legislative work is time-consuming and cannot meet urgent protection needs. VP's broad scope and type differences (e.g., personal social media accounts vs. enterprise metaverses) make uniform regulation difficult, with vague standards failing to resolve disputes [16].

2.2.2. Theory of multiple right objects

This theory holds VP is a "bundle of rights" involving multiple objects (e.g., intellectual property, privacy). However, it confuses VP with the objects of other rights—VP may involve intellectual property or privacy but is not itself the object of these rights [15]. For example, a private webpage with privacy content is not an object of privacy rights.

2.3. Views on not defining the nature of virtual property

2.3.1. Civil interest theory

Adopting a functionalist approach, this theory advocates focusing on practical protection balance rather than characterization. Based on Article 126 of the Civil Code, VP is protected as a civil interest. However, inferring VP is a civil interest merely because Article 127 follows Article 126 is far-fetched. This theory evades attribute determination, and with VP's growing importance, unclear nature will lead to mismatched protection intensity—an expedient measure incompatible with China's rule of law construction.

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2.3.2. Relational paradigm theory

Civil law has "right paradigm" (focused on rights) and "relational paradigm" (focused on inter-subject relationships). This theory argues the relational paradigm better resolves disputes: infringement by tort liability, contracts by service agreements, and inheritance by distinguishing contractual succession and personal interests [12]. However, the two paradigms intersect rather than oppose, and this theory also evades VP's attribute determination [3].

2.4. Summary

All existing doctrines have defects. Direct incorporation into the existing right system causes mismatches; quasi-application or avoiding characterization results in incomplete systems; the New-Type Right Theory has high legislative costs. A systematic and effective VP solution requires clarifying its nature and regulating it through current effective methods—but none of the above theories meet these requirements. Thus, this paper conducts further research on this basis.

3. Construction of a categorized theory for the protection of virtual property

Current categorized theories on virtual property (VP) have certain rationality in addressing judicial practice demands and resolving protection dilemmas, laying a foundational framework for defining VP's legal nature and selecting protection paths. However, they suffer from flaws such as ambiguous classification criteria, incomplete category coverage, and logical inconsistencies with the existing legal system. Against this backdrop, this paper first expounds the necessity of VP's categorized regulation, then constructs a scientific and viable new categorized regulatory theory by integrating VP's characteristics with the current legal framework.

3.1. Necessity of constructing a categorized regulatory theory

First, to swiftly establish an effective protection system, considering legislative costs and protection efficacy, discussions within the existing rights framework are optimal. The existing framework has formed a consistent, traceable regulatory model, conducive to safeguarding legitimate rights and combating infringements. Moreover, applying the existing system yields immediate results—clarifying applicable rules enables rapid establishment of a unified national protection system via judicial interpretations, whereas formulating new laws outside the framework requires lengthy legislative procedures.

Second, categorized theory covers VP's diverse objects while upholding legal system logic. VP disputes in China originated from game equipment like the Li v. Moubing Company Contract Dispute Case [5], but with the internet's penetration, VP now includes network accounts such as QQ and email, virtual items like game equipment and digital content (e.g., cloud files, social media posts)—excluding illegal virtual currencies. Due to distinct functional attributes, VP's nature, existence, and utilization modes vary significantly, making uniform regulation impractical. A one-size-fits-all approach would cause logical flaws. Karl Larenz noted that "type" is an auxiliary thinking form when abstract concepts fail to grasp diverse life phenomena [20]. Compared with conceptual thinking, categorized thinking is more flexible, adapting to social complexity and ensuring timely, comprehensive problem-solving. By classifying VP to "grasp universality from specific things" [21] and determining legal nature based on category characteristics, categorized

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regulation promotes VP protection's systematization and standardization, providing theoretical support for judicial practice [22].

3.2. Categories of virtual property

Reasonable classification is the cornerstone of VP's categorized regulation. Literally, VP has two core characteristics: "virtualness" and "property nature". "Virtualness" means VP is computer-based, relying on computer information systems as "electromagnetic records" and "electromagnetic data". "Property nature" requires VP to possess legal property attributes—scarcity, value, exclusivity, and disposability—to meet users' material or spiritual needs, so garbled codes are excluded.

Among these attributes, disposability is pivotal in modern jurisprudence. German civil law's classic definition—"real rights are rights of disposition, creditor's rights are rights of claim"—forms the logical core of the real right-creditor's right dichotomy, with "disposability vs. claimability" as the fundamental criterion for property right classification. Real rights' disposability allows right holders to directly control objects and exclude interference unilaterally, while creditor's rights' claimability limits right holders to requesting specific obligors' performance. Thus, disposability can also distinguish VP right categories.

VP users' disposability exhibits marked hierarchical differences, leading to the following classification:

High-disposability virtual property: Includes "non-network-type virtual property", for instance, valuable files/photos on personal hard drives, with almost complete user control—users can modify, trade, and generate economic value, with external interference only possible through illegal means. It also covers server-dependent VP under blockchain technology like NFTs, where private keys ensure exclusive control, and blockchain's immutability and distributed storage guarantee stable, absolute disposition.

Low-disposability virtual property: Refers to centralized VP highly dependent on network operators' servers, such as game equipment, platform virtual currencies and social media accounts. Users achieve basic exclusive use via account passwords or private keys, but VP's storage and existence rely on operators' server maintenance, with low decentralization. Disposition like account transfer is often restricted by user agreements because most game operators prohibit account trading, and VP may be lost if operators terminate services, resulting in limited user disposability.

3.3. Legal nature of various categories of virtual property

3.3.1. Low-disposability virtual property as "creditor's right vouchers"

Low-disposability VP's high reliance on operators' servers makes it inconsistent with general real right objects in terms of disposability. If operators suspend operations, real right claims for restitution are meaningless due to server loss, and compelling operators to continue services violates economic laws. Thus, monetary compensation is the feasible remedy.

Such VP's use and existence depend on user-operator network service contracts. Paying for VP is essentially purchasing a "creditor's right voucher"—which contains the right for requesting operators to provide higher-level services in exchange for real currency. For example, in the Li v. Moubing Company Contract Dispute Case [(2003) Chaominchu Zi No. 17848] [5], users receive game equipment gift packages (creditor's right vouchers) after payment; opening and using the packages constitutes requesting operators to perform specific services (e.g., modifying character attributes via coding).

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Unlike traditional categorized theories and the creditor's right theory which regard VP use as contract-based performance without independent legal status, this paper identifies low-disposability VP as creditor's right vouchers rather than creditor's rights. Users can manage, dispose of, and transfer such VP via private keys, but the disposition object is the voucher itself—enabling users to demand operators' performance. Thus, low-disposability VP is not subsumed by creditor's rights, differing essentially from existing theories.

3.3.2. Incorporating high-disposability virtual property into the protection of real rights

High-disposability VP's value inheres in its electromagnetic records—e.g., personal photos/videos have emotional and memorial value, while Bitcoin's value stems from scarcity. Its object is independent "electromagnetic records", conforming to Professor Hozumi Yatsuka's requirement that "real right objects must be independent and specific".

User disposition of high-disposability VP is system-automated per pre-set rules, independent of others' will or intervention. Although relying on computer information systems or blockchain technology, all property, including tangible objects, depends on conditional factors, like ship's value relies on water and electricity relies on circuits [23]. Contemporary computer information systems and blockchain are universal, low-failure infrastructure—opposing VP's real right protection on this basis is untenable. Users' exclusive control of high-disposability VP (via private keys on private terminals or blockchains) is equivalent to controlling safe-stored objects with physical keys, meeting real rights' direct disposability and absolute exclusivity.

A major criticism of VP's real right protection is the "tangibility" requirement for real right objects. The continental law system represented by Germany and Japan adheres to the Pandekten System, limiting "things" to tangible objects (German Civil Code Article 90). However, Roman law—continental law's origin—included both tangible and intangible things. Justinian's Institutes of Justinian distinguished "corporeal and incorporeal things", with the latter including rights. The Italian Civil Code defines things as "all objects of rights" [24], and the Portuguese Civil Code as "any object of legal relationships" [25]. In Taiwan's criminal legislation, electromagnetic records fall under the category of "deemed documents" and classifies energy theft as "theft of personal property". Thus, "things must be tangible" is not an international or historical consensus.

High-disposability VP conforms to real rights' disposability, exclusivity, and absoluteness, with real right protection consistent with China's legal system. Although China adheres to the principle of numerus clausus of real rights, the law should respond to the times—expanding real right objects to include new property types. For instance, electricity and water power, over which humans had low disposability in the Pandekten era, were included in the clauses of real right. As VP grows increasingly important in Chinese society, high-disposability VP qualifies for inclusion in real right objects

4. Application paths of categorized regulation

As elaborated above, emerging problems persist in current judicial practice concerning VP. "Theory is gray, but the tree of life is evergreen." A legal doctrine shall not remain a castle in the air; instead of lingering solely at the theoretical level, it must exert a positive impact on practice. This paper adopts categorized regulation of VP, clarifying that high-disposability virtual property falls under real rights while low-disposability virtual property constitutes creditor's right vouchers. The advantages of this approach are mainly reflected in the following aspects:

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4.1. Standardizing remedies for civil disputes

4.1.1. Remedies for low-disposability virtual property

4.1.1.1. Determination of ownership

Low-disposability VP's high dependence on network operators' servers often triggers ownership disputes between operators and users. Clarifying it as creditor's right vouchers facilitates dispute resolution. Acquired through purchase, barter, winning, or donation with time, effort, and money invested, such VP's ownership determination should refer to negotiable instruments—account IDs, game equipment, and similar assets shall belong to users, aligning with public legislative expectations.

Take the service contract dispute between Zhou and Shanghai Lilith Network Technology Co., Ltd. [4] as an example. The operator's user agreement included standard terms: deleting inactive accounts, prohibiting private transactions, and refusing mobile phone number binding changes for a plaintiff who had recharged over 4,000 yuan. The court could determine the disputed VP as a creditor's right voucher owned by the user, rendering the inactivity-based deletion clause invalid—it deprived the user of voucher ownership and unilaterally exempted the operator from service obligations.

4.1.1.2. Compensation for damages

Inconsistent VP characterization and ownership among courts have led to fragmented remedies. As a user-owned creditor's right voucher, damages for its loss shall be uniformly determined by three factors: the value of the unenforceable voucher's redeemable service, reasonable expenses like litigation fees and attorney fees, and foreseeable profit losses.

For instance, in Zhang Yuhua v. Zeng Hongwu [26], the plaintiff's game account was banned due to the defendant's plug-in use during leveling, preventing access to a time-limited game skin and causing a significant price drop. The court rejected the 26,888-yuan property damage claim, ordering a leveling fee refund and 3,000-yuan compensation, arguing the skin's absence did not drastically reduce service value. Following this logic, in Gu Guojian v. Yang Wenzhi [27], where the defendant retrieved a 1,300-yuan purchased account after the plaintiff invested 5,000 yuan in cultivation, damages should consider transaction price, cultivation costs, time/effort, and future equivalent service expenses. Similarly, in Hou v. Hong [9], the court should comprehensively assess losses from illegal possession of VP (creditor's right vouchers) rather than relying solely on the 15,075-yuan purchase price of lent game items.

4.1.2. Remedies for high-disposability virtual property

High-disposability VP includes hard drive-stored files/videos and blockchain-controlled assets (e.g., NFTs). Personal photos/videos carry strong personal and commemorative significance, with immense emotional value—essentially equivalent to physical photos or diaries, requiring compensation for moral damages instead of general standards.

Existing judgments support this logic. In Lu Yueqiang v. Zhou Xuewen [28], the court fully upheld the plaintiffs' moral damage claim for permanently lost wedding videos, citing the Supreme People's Court Interpretation on Several Issues Concerning the Determination of Liability for Compensation for Moral Damages in Civil Torts and recognizing the videos as "things" with

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personal interests. Similar rulings were made in cases involving children's 100-day photos [29], tort liability disputes [30], and wedding service negligence [31].

For theft of NFTs and digital collectibles, general damage compensation applies, referencing criminal law's valuation framework for special items (e.g., antiques, artworks) with volatile market values. Legal provisions such as the Interpretation on Several Issues Concerning the Application of Law in the Handling of Criminal Cases of Theft and the Measures for the Administration of Valuation of Seized, Recovered, and Confiscated Items require professional technical/quality identification for special items. Thus, establishing authoritative VP appraisal institutions is the optimal solution for valuation, providing a basis for judicial discretion.

High-disposability VP's ownership is determined by legitimate possession—photos/videos belong to creators, code documents to writers—with few disputes due to low external dependence. Remedies should follow real right rules, modeling tangible object protection systems.

4.2. Facilitating consistent determination of criminal offenses

Inconsistent VP characterization causes "similar cases, different judgments" in criminal cases. As VP is carried by electromagnetic data, illegal acquisition is sometimes convicted as theft and sometimes as the crime of illegally obtaining computer information system data.

In Xin Jingyu's case [32], the first-instance court convicted theft for secret game account theft involving huge amounts, while the second-instance court reclassified it as illegal acquisition of computer information system data, denying VP's property nature. Similar divergent rulings exist: Jin Junhui's theft conviction [33] vs. Wang et al.'s conviction for computer-related crimes [34], rooted in conflicting VP nature understandings.

This paper argues the boundary lies in whether the acquired data has property attributes. The crime of illegally obtaining computer information system data protects data confidentiality. Article 287 of the Criminal Law of the People's Republic of China stipulates traditional crimes committed via computers shall follow corresponding provisions—illegal acquisition of property-qualified VP for possession constitutes theft; non-property data constitutes the computer-related crime.

As VP (both high and low-disposability) possesses scarcity, value, exclusivity, and disposability, it has property attributes. High-disposability VPqualifies for theft convictions, analogous to physical document theft. Low-disposability VP also constitutes theft—holders can redeem services through it, similar to negotiable payment instruments like lottery tickets and bank deposit certificates under the Supreme People's Court and Supreme People's Procuratorate Interpretation on Several Issues Concerning the Application of Law in the Handling of Criminal Cases of Theft.

The Joint Interpretation stipulates theft amount calculation: bearer/non-refundable instruments include face value and accrued benefits; registered instruments are based on fixed/realized value or used as sentencing circumstances. For stolen VP: retrievable via operator reporting serves as a sentencing circumstance; resold/cashable or non-retrievable VP's value is determined by realized proceeds. For example, in Su Shun's case [35], the court convicted theft of creditor's right vouchers (iQiyi membership cards, JD E-cards) under Article 287, calculating the 451,487.5-yuan crime amount based on 95% of the 475,250-yuan face value, aligning with this paper's logic.

5. Conclusion

After years of development, virtual property has evolved from a niche concept to an indispensable part of social life, boasting significant protection value and practical significance. Existing regulatory approaches all suffer from inherent flaws: for instance, the creditor's right theory, real

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right theory, and intellectual property right theory advocate direct incorporation into the existing rights framework, which to a certain extent contradicts legal logic; the quasi - application of the dual system of real rights and creditor's rights theory and current categorized theories of virtual property propose referencing and flexibly applying existing rules, yet fail to provide a reasonable characterization and risk being disjointed; the civil interest theory and relational paradigm theory avoid defining the nature of virtual property, resulting in an incomplete system; and the new type of right theory is difficult to implement in the short term.

Against this backdrop, this paper classifies virtual property based on varying degrees of disposability: "non - network - type virtual property" that is completely independent of internet servers, and virtual property that requires server support but can achieve full exclusive control through blockchain technology are categorized as high - disposability virtual property; centralized virtual property highly dependent on network operators' servers is defined as low - disposability virtual property. High - disposability virtual property is governed by real right rules, while low - disposability virtual property is protected as creditor's right vouchers. This classification standardizes remedies for civil disputes and ensures consistent determination of criminal offenses.

It is hoped that this research can provide theoretical reference for the improvement of future digital property legal systems and promote the development of digital rule of law towards a more precise, efficient, and inclusive direction.

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