On the Recognition of Legal Personhood of Cross-border Decentralized Autonomous Organizations in the Web3.0 Era

Tang Kaixin
Law (Specialized Program in English for International Legal Affairs), Shantou University, Shantou City, Guangdong Province, 515063, China
tangkaixin742@gmail.com

ABSTRACT

Built on smart contracts and distributed ledgers, decentralized autonomous organizations (DAOs) cut across the territorial boundaries and hierarchical structures of traditional organizations, leaving the recognition of their legal personhood in genuine doubt. This paper argues that the difficulty originates in the wholesale failure of formal criteria centred on registration, domicile and nationality, and that the way forward lies in shifting the inquiry from formal criteria to substantive elements. On this basis it proposes a function–governance dual-orientation framework. The functional dimension asks whether an organization actually performs legal functions such as contracting, holding property and bearing liability. The governance dimension examines how governance power is actually distributed and where decisions are in fact made. Combining the two allows DAOs to be identified in a tiered manner. At the level of connecting factors, the paper refines the Centre of Main Interests (COMI) into the actual centre of governance decision-making and, drawing on the nerve-centre test developed in U.S. corporate law and the functional approach of the UNIDROIT Principles on Digital Assets and Private Law, answers the private-international-law objection that COMI cannot meaningfully be applied to DAOs. It closes with a proposed Chinese response built around tiered identification, reconstructed connecting factors, and dispute resolution.

Keywords: Decentralized Autonomous Organization; Legal Personhood; Function–Governance Dual-Orientation; Atual Centre Of Governance Decision-Making; Cross-Border Choice of Law

1. INTRODUCTION

The iteration of blockchain technology has given rise to organizational forms whose defining feature is decentralization. A Decentralized Autonomous Organization (hereinafter DAO) encodes its rules in smart contracts, records its governance process on a distributed ledger, and allocates voting weight through governance tokens, thereby achieving collective decision-making and asset disposition in the absence of any central manager. Such organizations pose a fundamental challenge to traditional organizational law and private international law, both of which are premised on the triad of entity, territory and hierarchy.

Existing scholarship has approached the problem from several directions. De Filippi and Wright advanced the concept of lex cryptographia, revealing the tension between code-based rules and state law [1]. Bonomi and her co-editors observed that the Centre of Main Interests (COMI) principle adopted by the EU Insolvency Regulation cannot be applied directly to crypto-assets, and that the identification difficulty is especially acute for DAOs [2]. The Law Commission of England and Wales, in its 2024 DAO Scoping Paper, proposed a spectrum classification and argued that organizational law should remain technology-neutral [3]. Within Chinese scholarship, Xiao and Peng argue for recognizing DAOs as a new type of legal entity and recommend pilot programmes [4]. Chang and Ming reveal the inherent conflict between the decentralization ideal and the governance reality of DAOs [5]. Chen focuses on the resolution of blockchain smart-contract disputes and the institutional boundaries of decentralized justice [6]. These studies lay an important foundation, yet the prevailing new-legal-entity thesis focuses chiefly on domestic characterization and pays insufficient attention to the failure of connecting factors in cross-border recognition.

Proceeding from this gap, the paper poses three questions in turn. First, what tension exists between the governance reality of DAOs and the discourse of decentralization? Second, what contradictions does cross-border recognition face, and why do traditional connecting factors fail? Third, by what framework should legal personhood be reconstructed, and how should it be implemented within the Chinese system?

2. GOVERNANCE REALITY AND THE CONTEST OF CHARACTERIZATION THEORIES

2.1 Technical Architecture and Operating Mechanism

The operation of a DAO rests on three elements: smart contracts, distributed ledgers and governance tokens. Smart contracts write the organizational charter, deliberation rules and fund-allocation conditions into the blockchain as code that executes automatically once its conditions are met and that can hardly be altered unilaterally. The distributed ledger permanently records every transaction and every vote across all network nodes, ensuring that governance remains traceable. Governance tokens grant holders voting rights in proportion to their holdings, and majority outcomes are then implemented automatically by the smart contracts. Together, these elements allow a DAO to complete collective decision-making and asset disposition without any central management or fixed place of business, which is precisely what makes the recognition of its legal personhood fundamentally difficult.

2.2 The Discourse of Decentralization and the Reality of Governance

DAOs are marketed under the banner of decentralization, yet empirical research reveals a marked tension between this discourse and their governance reality. Based on an analysis of 1,859 DAOs, Rikken et al. found that roughly twenty token holders constitute the critical threshold for an organization's survival, while the vast majority of holders remain persistently inactive [7]. Han et al. quantified the concentration of voting power and found that leading holders often control more than 67% of the votes, with a mean Herfindahl–Hirschman Index (HHI) of about 0.29 [8]. Feichtinger et al., analysing 21 DAO governance systems, found that in 17 of them the voting power sufficient to determine any outcome was held by fewer than 10 participants [9].

Taken together, these findings point to a pattern of formal decentralization coupled with substantive centralization. This has a dual significance for the present inquiry. At the level of characterization, it undermines the claim that a DAO's decentralized form means it has no subject and no responsible party. At the level of connecting factors, it suggests that, since governance decisions are in fact made by a small number of identifiable actors at a particular locus, an actual centre of governance decision-making has a factual basis on which to serve as a connecting factor.

2.3 Competing Theories of Legal Characterization

Theories and case law on the legal characterization of DAOs present a pluralistic picture. The first is the general-partnership theory, exemplified by Sarcuni v. bZx DAO (2023) [10], in which the U.S. District Court for the Southern District of California held that bZx DAO constituted a general partnership and that token holders, as partners, were jointly liable for the organization's debts. The court reasoned that a DAO not registered as any limited-liability entity, whose members nonetheless operate jointly for profit, must revert to the default rule of general partnership. The consequence is severe, as any token holder who participates in governance may bear unlimited liability. The second is the unincorporated-association theory, exemplified by CFTC v. Ooki DAO of the same year [11], in which the U.S. District Court for the Northern District of California held that Ooki DAO was a person under the Commodity Exchange Act and could be sued as a procedural subject, though the substantive liability of its members was left unresolved. The third is the new-legal-entity theory, which advocates conferring independent legal personhood on DAOs through dedicated legislation. This view is widely held in Chinese scholarship [4], but it depends heavily on whether each jurisdiction chooses to legislate and therefore cannot by itself secure uniform cross-border recognition. Each theory captures only part of the picture, and none alone answers the core difficulty of cross-border recognition.

3. THE MULTIPLE CONTRADICTIONS OF CROSS-BORDER RECOGNITION

3.1 Heterogeneous Legislation and the Recognition Dilemma

Comparatively, jurisdictions take highly heterogeneous legislative stances on DAO personhood, and their approaches broadly fall into two camps, dedicated empowerment and functional regulation. Within the dedicated-empowerment camp, Wyoming enacted its Decentralized Autonomous Organization Supplement in 2021 [12], allowing DAOs to register as a special limited-liability company (a DAO LLC), and in 2024 passed the Decentralized Unincorporated Nonprofit Association Act (DUNA), which confers independent legal-entity status [13]. Uniswap governance adopted this framework in 2025, registering as a Wyoming DUNA under the name DUNI, a prominent recent example of the DUNA structure in use [14]. The Marshall Islands took a more direct route: its 2022 Decentralized Autonomous Organization Act made it the first jurisdiction worldwide to confer independent legal personhood on DAOs by sovereign legislation, enabling a DAO to own property, conclude contracts, and sue and be sued in its own name [15]. Within the functional-regulation camp, the

EU's Markets in Crypto-Assets Regulation (MiCA) does not answer the question of personhood directly but addresses it indirectly through an exemption for fully decentralized arrangements [16], while the Law Commission of England and Wales favours technology neutrality and declines to create a dedicated entity type [3]. The direct consequence of this heterogeneity is a recognition dilemma, as the same DAO may be an independent legal person in the Marshall Islands yet be treated as a general partnership before a U.S. court, its legal status shifting sharply with the forum in which it happens to be sued.

3.2 The Wholesale Failure of Traditional Connecting Factors

Cross-border choice of law presupposes that a connecting factor will point a foreign-related legal relationship to the law of a particular jurisdiction. Yet traditional connecting factors fail almost without exception when applied to a DAO. The place of registration or incorporation fails first, as most DAOs are not registered in any jurisdiction, and where a few are, the place of registration is often divorced from the place of actual operation. Domicile or principal place of business fails as well, since a DAO has no physical office, its server nodes are scattered worldwide, and no single domicile can be identified. Nationality, whether of the organization or of its members, fails too, because members are anonymous and dispersed across many countries, and their nationality is neither ascertainable nor capable of representing the organization's own legal connection. Place of conduct fails for the same underlying reason, as smart contracts execute automatically on a distributed ledger, transactions occur simultaneously across all nodes, and no single place of conduct can be pinned down.

3.3 Regulatory Arbitrage and the Liability Vacuum

The failure of connecting factors, compounded by heterogeneous legislation, produces the twin risks of regulatory arbitrage and a liability vacuum. On one hand, a DAO may register in the most permissive jurisdiction while operating substantively worldwide, thereby evading the constraints of stricter regimes. On the other hand, where the organization's conduct causes harm, attributing responsibility to a particular subject is difficult in a cross-border setting, leaving victims with no clear avenue for redress. The Mango Markets episode illustrates the point, as the question whether a settlement resolution passed by on-chain governance vote carries legal effect highlights both the difficulty of reconciling on-chain autonomy with the existing legal order and the underlying complexity of jurisdiction and connecting factors [17].

4. A FUNCTION–GOVERNANCE DUAL-ORIENTATION RECONSTRUCTION AND CHINA'S RESPONSE

4.1 From Formal Criteria to Substantive Elements

The key to resolving these contradictions lies in shifting the recognition of personhood from formal criteria centred on registration, domicile and nationality to substantive elements centred on an organization's actual functions and actual governance. Formal criteria fail because they presuppose that an organization must have a registration, a domicile and an ascertainable nationality, a picture of organizational life that DAOs precisely shatter. The substance of personhood lies not in formal registration but in whether an organization actually performs the functions proper to a legal subject, namely contracting independently, holding and disposing of property, and bearing liability on its own account. This shift accords with the general civil-law principle of substance over form, and it converges with the functional approach adopted by the UNIDROIT Principles on Digital Assets and Private Law [18].

4.2 The Functional and Governance Dimensions

The functional dimension examines whether an organization actually performs three core legal functions. The first is the contracting function, namely whether the organization can form binding agreements with third parties in a collective name. The second is the property function, namely whether it can hold, manage and dispose of property independently of its members. The third is the liability function, namely whether it can bear liability out of its own property, thereby achieving relative separation of liability between members and organization. This dimension supplies a unified yardstick for assessing vastly different DAOs. An organization used only for member communication, holding no common property and contracting with no one, deserves a different legal appraisal from a decentralized-finance organization that manages a vast treasury and contracts frequently. In this way the functional dimension answers the spectrum classification's basic insight, that personhood is not a binary, all-or-nothing question.

The governance dimension examines how governance power is actually distributed and by whom decisions are in fact made. As the empirical research in Section 2.2 shows, most DAOs exhibit formal decentralization alongside substantive centralization, and this dimension is meant precisely to look past the appearance of decentralization and identify the true internal power structure and decision-making centre. Its function is likewise twofold. At the level of characterization, dispersing liability across all anonymous token holders is neither fair nor realistic where governance power is concentrated in a few identifiable actors, whereas partnership-style joint liability loses its justification where power is genuinely dispersed. At the level of connecting factors, the locus where decisions are actually made can serve as a factual anchor for identifying the organization's legal connection. Combining the two dimensions yields the function–governance dual-orientation framework, in which the functional dimension determines whether an organization warrants a corresponding legal status, the governance dimension determines how liability ought to be allocated between organization and members, and the combined strength of the two grounds a tiered identification of DAOs.

4.3 Reconstructing the Connecting Factor as the Actual Centre of Governance Decision-Making

At the level of cross-border choice of law, this paper proposes retaining the Centre of Main Interests (COMI) but refining it into the actual centre of governance decision-making. Bonomi and her co-editors have questioned the direct application of COMI to blockchain entities, their central concern being that blockchain transactions are dispersed across global nodes, which makes a single centre of interests hard to identify [2]. The response proposed here is to distinguish the place where transactions occur from the place where decisions are made. As to where transactions physically occur, the blockchain indeed has no single centre. As to where governance decisions are made, however, the empirical research cited in Section 2.2 shows that most DAO decisions are in fact made by a small number of identifiable core actors, so that a decision centre does exist as a matter of fact and can be identified. The true locus of COMI for a DAO, therefore, should not be an elusive transaction centre but an empirically identifiable actual centre of governance decision-making. This approach parallels the nerve-centre test that U.S. courts use to locate a corporation's principal place of business, which likewise looks to where direction and decisions are actually made rather than to where transactions occur [19], and it thereby gives the reconstructed connecting factor support from comparative law.

4.4 China's Institutional Response

China's response to DAOs should first implement the function–governance dual-orientation framework at the level of identification rules, rather than forcing DAOs prematurely into the existing dichotomy between legal persons and unincorporated organizations under the Civil Code. DAOs may be divided into three tiers according to the combined strength of the two dimensions. (1) For organizations that hold no common property and contract with no one, no independent personhood should be granted, and the consequences of their conduct should be handled according to the specific legal relationships among their members. (2) For organizations that hold property and contract externally, but whose governance is highly concentrated, treatment by analogy to an unincorporated organization is appropriate, with the actual controllers bearing corresponding liability. (3) For organizations that are functionally complete, relatively dispersed in governance, and willing to seek legal status, an independent status akin to a legal person, together with limited liability, may be conferred through a dedicated registration procedure. At the level of dispute resolution, the corresponding effect of on-chain voting resolutions may be recognized within the limits of respecting on-chain autonomy, while judicial review should be reserved for resolutions that harm third-party interests or violate mandatory rules [6]. At the level of regulatory coordination, China should promote functional regulation based on the place of actual operation rather than the formal place of registration, so as to counter regulatory arbitrage, and it should participate actively in shaping uniform international private-law rules for digital assets, so as to ease conflicts among jurisdictions' recognition rules.

5. CONCLUSION

The rise of DAOs in the Web3.0 era poses a fundamental challenge to traditional organizational law and private international law, both premised on the triad of entity, territory and hierarchy, and the root of the difficulty in recognizing their personhood lies in the wholesale failure of formal criteria centred on registration, domicile and nationality. The core proposition of this paper is to shift the governing paradigm from formal criteria to substantive elements, to identify DAOs in a tiered manner through the function–governance dual-orientation framework, and to reconstruct the cross-border connecting factor around the actual centre of governance decision-making. The value of this approach is that it matches vastly different organizational forms with proportionate legal consequences, while providing an operable factual anchor for cross-border recognition.

REFERENCES

[1] DE FILIPPI P, WRIGHT A. Blockchain and the Law: The Rule of Code[M]. Cambridge, MA: Harvard University Press, 2018.

[2] BONOMI A, LEHMANN M, LALANI S (eds.). Blockchain and Private International Law[M]. Leiden: Brill Nijhoff, 2023.

[3] Law Commission of England and Wales. Decentralised Autonomous Organisations (DAOs): A Scoping Paper[R]. London: Law Commission, 2024.

[4] Xiao Yang, Peng Ailian. Reflections on the Legal Subjectivity of Decentralized Autonomous Organizations: Legislative Practice, Rule-Making, and China’s Response [J]. Journal of International Economic Law, 2024(2): 79-94.

[5] Chang Yi, Ming Qingzhong. DAOs Also Have a “Way”: A Study on the Theoretical Origins and Internal Conflicts of Decentralized Autonomous Organizations [J]. Foreign Economics and Management, 2024, 46(2): 70-86.

[6] Chen Aifei. The Boundaries of Possibility in Resolving Blockchain Smart Contract Disputes [J]. Comparative Law Studies, 2024(5).

[7] RIKKEN O, JANSSEN M, KWEE Y. Governance Impacts of Blockchain-based Decentralized Autonomous Organizations: An Empirical Analysis[J]. Policy Design and Practice, 2023, 6(4): 465-487.

[8] HAN J, LEE J, LI T. DAO Governance and Voting-power Concentration: An Empirical Study[R]. Working Paper, 2023.

[9] FEICHTINGER R, FRITSCH R, VONLANTHEN Y, et al. The Hidden Shortcomings of (D)AOs: An Empirical Study of On-chain Governance[R]. Zurich: ETH Zurich, 2023.

[10] Sarcuni v. bZx DAO, No. 22-cv-618-LAB-DEB[Z]. S.D. Cal., 27 March 2023.

[11] CFTC v. Ooki DAO, No. 22-cv-05416-WHO[Z]. N.D. Cal., 8 June 2023.

[12] Wyoming Legislature. Wyoming Decentralized Autonomous Organization Supplement, Wyo. Stat. Ann. §§17-31-101 to 17-31-116[Z]. Cheyenne: State of Wyoming, 2021.

[13] Wyoming Legislature. Decentralized Unincorporated Nonprofit Association Act, Wyo. Stat. Ann. §§17-32-101 to 17-32-116[Z]. Cheyenne: State of Wyoming, 2024.

[14] Uniswap Foundation. Welcome to DUNI[EB/OL]. (2025-09-09) [2026-07-20]. https://vote.uniswapfoundation.org/info.

[15] Republic of the Marshall Islands. Decentralized Autonomous Organization Act 2022, 2 MIRC Ch.11[Z]. Majuro: Registrar of Corporations, 2022.

[16] European Parliament and Council. Regulation (EU) 2023/1114 on Markets in Crypto-Assets (MiCA)[Z]. Official Journal of the European Union, L150/40, 9 June 2023.

[17] Mango Labs, LLC v. Eisenberg, No. 1:23-cv-00665[Z]. S.D.N.Y., 25 January 2023.

[18] International Institute for the Unification of Private Law (UNIDROIT). Principles on Digital Assets and Private Law[R]. Rome: UNIDROIT, 2023.

[19] Hertz Corp. v. Friend, 559 U.S. 77[Z]. Supreme Court of the United States, 2010.