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Guy C. Charlton,[*] *Michael Adams*[**] *& Cindy Whang*[***]

INTRODUCTION

On July 1, 2021, the Wyoming "Decentralised Autonomous Organizations Act" entered into force. This act followed pioneering 2018 Vermont legislation that allows for the establishment of Blockchain-based Limited Liability Companies.[1] The legislation extends Wyoming's earlier legislative innovations involving the recognition and use of cryptocurrencies.[2] It is the first legislation fully recognising a "Decentralised Autonomous Organization" (DAO) as a legal entity as a distinct DAO

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[1] VT. STAT. ANN., tit. 11, § 4171 (2017); *see also* DAILY FINANCIAL INFO DIRECTORY, *Vermont Registers First DAO LLC in USA* (June 12, 2019), https://www.dfid.org/news/vermont-registers-first-dao-llc-in-usa (an act Related to Blockchain Business Development was signed by Vermont Governor Phil Scott on May 30, 2018 and became effective on July 1, 2018. The creation of blockchain-based limited liability companies ("BBLLCs") allows blockchain companies to protect owners, managers and blockchain participants from unwarranted liability by forming BBLLCs. It also gives blockchain companies an enforceable legal framework to create custom governance and organizational structures that fit their unique technology and circumstances); Candace McCarthy, *Technology Company Creates First Blockchain-Based LLC* (July 13, 2018), https://gravelshea.com/2018/07/vermont-technology-company-creates-first-blockchain-based-Vermontllc/#:~:text=Gravel%20%26%20Shea%20is%20pleased%20to,LLC%20on%20July%201%2C%202018.

[2] Caitlin Long, *What Do Wyoming's 13 New Blockchain Laws Mean?* (Mar. 4, 2019), https://caitlin-long.com/what-do-wyomings-blockchain-laws-mean/ (stating that prior to the DAO Act, Wyoming had enacted thirteen laws relating to cryptocurrencies. These laws, among other things, recognize direct property rights for individual owners of digital assets of all types (virtual currencies, digital securities and utility tokens) and as such transactions involving cryptocurrencies require governance and regulation under the Uniform Commercial Code (U.C.C). Enrolled Act of July 1, 2019, Wyo. No. 39.).

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Limited Liability Company (LLC).[3] It establishes a procedure whereby DAO members, managers and business organizations, which have previously functioned outside the usual legal rules that govern business forms and governance can avail themselves to the benefits of limited liability and legal entity status. Building on the Wyoming LLC Law,[4] the Act also sets forth minimal obligations for managers, underlying governance arrangements for governance tokens and protections for DAO members.

It is likely that other jurisdictions will enact similar legislation in the coming years. DAOs have become increasingly controversial as their use has spread. Currently most DAOs are jurisdictionless. In addition, DAO related 'miners', 'nodes' and 'curators' or "governance tokens" do not presently fit into accepted legal categories in most jurisdictions. Notwithstanding the problem that there is no agreed upon definition of what constitutes a DAO, there is continuing debate over the appropriate legal status of such organization (if any) and their relationship to regulatory and legal systems. On one hand, some commenters argue that because a DAO operates as an autonomous code on the blockchain they should continue to operate independently of legal systems. On the other hand, other scholars have argued that the relationship between human agents and the DAO blockchain code creates the potential for fraud, such that legal regulation is necessary.

This legal ambiguity is shared with cryptocurrencies and non-fungible tokens, but the use of DAO structure also implicates issues of corporate governance and member/shareholder rights. While DAOs have been seized upon by proponents as a means of rectifying the agent-principle problem inherent in the corporate structure, DAOs cannot completely eliminate the problems related to asymmetrical information, nor can they eliminate the issues arising from the powers and the incentives that different individuals may have within the DAO structure. This problem leads to an inquiry into the appropriate conceptualisation of a DAO as a "legal entity" as well as the consideration of the legal relationships the DAO has with third parties, among its members and between management and the members.

Wyoming's creation of a legal structure for DAO in "Wyoming Decentralised Autonomous Organization Supplement" which uses the LLC framework is one attempt to address these issues. The Act creates a special

[3] As of the date of this Article, DAOs are not recognised as legal entities except in Wyoming (USA), Vermont (USA) and the Republic of Marshall Islands.

[4] WYO. STAT. § 17-29-101 (2022).

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category of Limited Liability Company for the decentralised autonomous organizational structure. Under the Act, DAO LLC's are either member-managed or algorithmically managed through smart contracts. While usefully extending jurisdiction as well as business and agency rules to a previously unregulated activity, this attempt by Wyoming is unlikely to address the major legal and conceptual issues with DAOs. On the one hand, the establishment of legal entity status is an important aspect of regulating this growing area. On the other hand, using the LLC structure rather than other business entity legal categories incorporates existing legal problems relating to fiduciary and due care duties in LLC law, which can be magnified in a DAO institutional structure. The broader LLC jurisprudence remains contested as to the content and scope of duties among members, the LLC and the managers. At the same time, the Act does little to address the more fundamental issue of whether DAO governance tokens are 'securities' under federal law because there is no bright-line rule in federal law concerning the categorization of LLC interests, undermining regulatory clarity.

This Article argues that the recognition of DAOs as legal entities is a positive step toward extending legal protections to DAO members and third parties who engage in transactions with DAOs. However, the nature of LLCs and membership interests in the statutory scheme as well as the ability of LLC members to opt-out of fiduciary and other obligations towards other LLC members under the Wyoming LLC law creates a misleading sense of legal oversight and does little to address the potential for abuse and fraud that can arise with a DAO. Rather there should be a set of minimal obligations for managers, underlying governance arrangements for governance tokens and protections for DAO members to prevent the use of the organizational form to facilitate the misappropriation of member contributions and fraud.

I. DAO AS AN ORGANIZATIONAL FORM AND LEGAL ENTITY

The DAO organizational form has emerged with the increased sophistication of smart contract-based technologies and block chain networks (Distributed Ledger Technology), which create the ability to address

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organizational and contractual inefficiencies or problems.[5] The members of the DAO do not have the usual formal contracts with the organization or with other members. Rather their position and role in the organization is governed by smart contract provisions that exist within software code, which in turn is embedded in the larger structure of the participating network.[6] It is also envisioned that most, if not all, third-party dealings with the DAO are executed through smart contracts. A DAO entity theoretically can be used as a mechanism whereby individuals can work and collaborate together without the restrictions and governance issues which can accompany organizations that are legally created and managed by natural persons. The mechanism can also be used by registered business entities to automate the governance rules that may be contained in shareholder agreements, corporate bylaws or imposed by law.[7]

There is no set definition for Decentralised Autonomous Organization. Christoph Jentzsch posits that a DAO comprises a set of standard smart contract code[8] on the blockchain which enables: "(1) participants to maintain

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[5] Nick Szabo, *Smart Contracts: Building Blocks for Digital Markets*, SEMANTIC SCHOLAR (2019), https://www.fon.hum.uva.nl/rob/Courses/InformationInSpeech/CDROM/Literature/LOTwinterschool2006/szabo.best.vwh.net/smart_contracts_2.html (defining smart contracts as "a set of promises, specified in digital form, including protocols within which the parties perform on these promises"; these protocols, or sets of rules and procedures are embedded with a blockchain which can receive and send assets as well as information without human involvement); Farshad Ghodoosi, *Contracting in the Age of Smart Contracts*, 96 WASH. L. REV. 51, 58 (2021) (explaining that the computer code automatically executes all or parts of an agreement and is stored on a blockchain-based platform. The code can either be the sole manifestation of the agreement between the parties or might complement a traditional text-based contract and execute certain provisions. The code itself is replicated across multiple nodes of a blockchain and, therefore, benefits from the security, permanence and immutability that a blockchain offers, and also noting that smart contracts have three features: (1) full automation of contract formation and execution; (2) contract validation by other users; (3) anonymity of contractual parties); Stuart D. Levi, *An Introduction to Smart Contracts and Their Potential and Inherent Limitations*, SKADDEN (May 7, 2018), https://www.skadden.com/insights/publications/2018/05/an-introduction-to-smart-contracts. *See* Jeremy M. Sklaroff, Comment, *Smart Contracts and the Cost of Inflexibility*, 166 U. PA. L. REV. 263 (2017).

[6] *Tokens, Cryptocurrencies & Other Cryptoassets*, BLOCKCHAINHUB BERLIN, https://blockchainhub.net/tokens/ (last visited Dec. 4, 2019).

[7] Christoph Jentzsch, *Decentralised Autonomous Organization to Automate Governance*, SLOCK.IT WHITE PAPER (2016), https://lawofthelevel.lexblogplatformthree.com/wp-content/uploads/sites/187/2017/07/WhitePaper-1.pdf.

[8] Szabo, *supra* note 5 (explaining that a "smart contract" can be described as: a computerized transaction protocol that executes terms of a contract. The general objectives of smart contract design are to satisfy common contractual conditions (such as payment terms, liens, confidentiality, and even enforcement), minimize exceptions both malicious and accidental, and minimize the need for trusted intermediaries. Related economic goals include lowering fraud loss, arbitrations and enforcement costs,

direct real-time control of contributed funds" and where "(2) governance rules are formalized, automated and enforced using software."[9] Hassan and de Filippi define a DAO as: "a blockchain-based system that enables people to coordinate and govern themselves mediated by a set of self-executing rules deployed on a public blockchain, and whose governance is decentralised (i.e., independent from central control)."[10] Allen and Overy define a DAO as a complex smart contract, or set of smart contracts that "can be programmed to operate autonomously, without human involvement, or the code can provide for direct, real-time control of the DAO and funds controlled by it."[11] These computer program(s), "running on a peer-to-peer network" incorporate governance and decision-making rules.[12] Hsieh et al. describe DAOs as: "non-hierarchical organizations that perform and record routine tasks on a peer-to-peer, cryptographically secure, public network, and rely on the voluntary contributions of their internal stakeholders to operate, manage, and evolve the organization through a democratic consultation process."[13] Regardless of the definition,, it is evident that a DAO, at a minimum, must have all governance and decision-making rules implemented by way of smart contracts which are deployed over a public or relevantly accessible blockchain.[14]

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and other transaction costs); *see also* Report of Investigation Pursuant to Section 21(a) of the Securities Exchange Act of 1934: The DAO, Securities Exchange Act, Release No. 81207 at 2 (July 25, 2017), https://www.sec.gov/files/litigation/investreport/34-81207.pdf.

[9] Jentzsch, *supra* note 7, at 1.

[10] Samer Hassan & Primavera De Filippi, *Decentralised Autonomous Organization*, 10 INTERNET POL'Y REV. 2 (2021), https://doi.org/10.14763/2021.2.1556.

[11] *Decentralised Autonomous Organizations*, ALLEN & OVERY LLP (July 11, 2016), https://www.allenovery.com/en-gb/global/news-and-insights/publications/decentralised-autonomous-organizations; *see generally* Jared Arcari, *Decoding Smart Contracts: Technology, Legitimacy, & Legislative Uniformity*, 24 FORDHAM J. CORP. & FIN. L. 363 (2019).

[12] ALLEN & OVERY LLP, *supra* note 11.

[13] Ying-Ying Hsieh et al., *Bitcoin and the Rise of Decentralised Autonomous Organizations*, 7 J. ORG. DESIGN 1, 2 (2018).

[14] Alex Murray, Scott Kuban, Matt Josefy & Jon Anderson, *Contracting in the Smart Era: The Implications of Blockchain and Decentralised Autonomous Organizations for Contracting and Corporate Governance*, 35 ACAD. OF MGMT. PERSP. 622, 623 (2021), https://journals.aom.org/doi/full/10.5465/amp.2018.0066 (explaining that the extent of decentralization in a blockchain varies. On one hand there are permissionless blockchains, such as Ethereum. On a permissionless blockchain anyone can perform or verify transactions once they have installed the correct software. Transactions on permissionless blockchains systems are expensive, slow, and irreversible, due to the enormous number of participants verifying and processing the governing code. High participation is what provides the benefit of maximum decentralization—replacing costly or corruptible intermediaries with user-driven consensus); Vitalik

DAOs operate on a public blockchain that is said to eliminate the agent-principle problem inherent in many business forms. All members can participate in decision-making and transactions involving the DAO, and the record of these decisions and transactions is transparent and immutable.[15] A blockchain is an open source technology which is able to combine peer-to-peer networks, such as the internet, with cryptography (public key messaging and hash functions) which creates an immutable time-stamped public transactional information that can be "stored in publicly accessible, decentralised, distributed, automated ledgers."[16] Recently the California Blockchain Working Group defined a "Blockchain" as:

> [A] domain of technology used to build decentralised systems that increase the verifiability of data shared among a group of participants that may not necessarily have a pre-existing trust relationship. Any such system must include one or more "distributed ledgers," specialized datastores that provide a mathematically verifiable ordering of transactions recorded in the datastore. It may also include "smart contracts" that allow participants to automate pre-agreed business processes. These smart contracts are implemented by embedding software in transactions recorded in the datastore.[17]

While these entities or organizations operate on a "blockchain" there is no agreed upon definition of a blockchain, nor is there agreement as to what specific attributes or characteristics are required for something to be considered a blockchain.[18] The Wyoming Statute defines a Blockchain as a

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Buterin, *On Public and Private Blockchains*, ETHEREUM BLOG (Aug. 7, 2015), https://blog.ethereum.org/2015/08/07/on-public-and-private-blockchains/ (expounding that on the other hand, there are permissive or private block chains, that are typically developed for inter-corporate use, a consortium of businesses where transactions are publicly viewable but participation is restricted or for use among private businesses. A private blockchain only admits certain preapproved entities as participants. Transactions on private blockchains are verified quickly and cheaply); Sklaroff, *supra* note 5, at 276 n.50.

[15] HENNING DIEDRICH, ETHEREUM BLOCKCHAINS, DIGITAL ASSETS, SMART CONTRACTS, DECENTRALISED AUTONOMOUS ORGANIZATIONS 33 (2016) ("Blockchains do symmetric computation. Every node in a blockchain stores and computes the same data. The nodes even execute the exact same calculations at roughly the exact same moment in time." . . . It's not a blockchain if its copies are not stored, identically, across massively many computers. . . . Fundamentally, the data a blockchain holds is a sequence of transactions. And as of today it is essential that no transaction is ever forgotten.").

[16] Kelvin F.K. Low & Eliza Mik, *Pause the Blockchain Legal Revolution*, 69 INT'L & COMPAR. L. Q. 135, 137 (2020).

[17] Camille Crittenden, *Blockchain in California: A Roadmap*, U. CAL. BERKELEY: CTR. FOR INFO. TECH. RSCH. IN THE INT. OF SOC'Y 18 (July 1, 2020), https://escholarship.org/uc/item/2j9596dp.

[18] Angela Walch, *The Path of the Blockchain Lexicon (and the Law)*, 36 REV. BANKING & FIN. L. 713, 725 (2017).

"digital ledger or database which is chronological, consensus-based, decentralised and mathematically verified in nature."[19] The Vermont statute which allows for the creation of Blockchain-based limited liability companies defines "blockchain technology" as "a cryptographically secured, chronological, and decentralised consensus ledger or consensus database maintained via Internet, peer-to-peer network, or other interaction."[20]

These definitions contrast with the Delaware corporation code, which allows for the use of blockchain to store corporate records, has no definition of "blockchain." It merely allows for the corporate records to be kept or stored on "1 or more distributed electronic networks or databases."[21] Compounding these definitional difficulties is the very malleability and ambiguity of the words used to describe such technology and processes.

Becoming a member of a DAO provides individuals and entities with the ability to engage in decision-making (e.g., submitting proposals, casting ballots) as well as other functions relevant to the particular smart contracts and overall design of the DAO. Membership interests in a DAO are generally pseudo-anonymous. There are various ways in which individuals and entities may become a member of a DAO, including "token-based membership" and "share-based membership." Token-based membership is one of the most common forms of DAO membership.[22] This type of membership in the DAO is obtained through the possession of an administrative or governance token, which provides the user access to the decision-making process and the DAO

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[19] WYO. STAT. § 34-29-106(g)(i) (2022). In 2018 the Legislature amended CAL. CORP. CODE § 204 (General Corporation Law) and CAL. CORP. CODE § 2603 (Social Purpose Corporation Act). The new law will take effect on January 1, 2019, and it has a sunset provision causing it to automatically expire on January 1, 2022. The California law defined "blockchain technology" as a "mathematically secured, chronological, and decentralised consensus ledger or database." The California Law permitted using the blockchain for recording and tracking the issuance and transfer of stock certificates, the names of corporation's stockholders of record, and the address and number of shares registered in the name of each stockholder. Delaware law, while permitting corporate records to be maintained on a "distributed electronic ledger or databases" does not define the term). *See* DEL. CODE. ANN tit. 8, § 224 and § 232(d) (2017).

[20] VT. STAT. ANN. 12, § 1913 (2017).

[21] DEL. CODE ANN. tit. 8, § 224 (1953). *See also* DEL. CODE ANN. tit. 18, § 101(6) (1953) for provisions for LLCs.

[22] Gail Weinstein, Steven Lofchie & Jason Schwartz, Fried, Frank, Harris, Shriver & Jacobson LLP, *A Primer on DAOs*, Harvard Law School Forum on Corporate Governance (Sept. 17, 2022), https://corpgov.law.harvard.edu/2022/09/17/a-primer-on-daos/.

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community based on the particular governance arrangement.[23] The token is analogous to obtaining shares in a public share-market. The identity of the token holder and user is irrelevant when procuring the token, and the DAO has no ability to exclude particular token holders based on their identity or other characteristics once the holder has met the ownership/user conditions for obtaining the token.[24] Members/Users can obtain these tokens without the permission of the DAO or the other DAO members.[25] For example, in order to become a member of Developer DAO, an individual must obtain the Genesis NFT. The possession of the Genesis NFT provides the owner/user "with permanent access to the community and governance rights" enabling the owner/user to become an active member of Developer DAO.[26] A permissionless token can be obtained through such things as an award, providing liquidity to the DAO or some designated third-party, or some other "evidence of work," which once verified, enables the owner/user to access the token, which in turn provides access in the DAO.[27] The other type of membership is "share-based membership." This membership is offer-based. Individuals, pseudo-anonymous individuals and entities can offer third parties an opportunity to acquire tokens to join the DAO, typically in exchange for tokens or work. Conversely, the DAO may place membership offers to an individual or class of individuals in exchange for tokens, fiat or cryptocurrency, work, the reputation of the new member or for "nothing."

Membership participation and rights upon exiting DAO membership are dependent upon proportionate share or some other agreed value of the DAO represented by the tokens held by the member in a manner analogous to corporations or other unincorporated associations.[28] An example of a shared-based membership is MolochDAO which requires a potential member to demonstrate that they have certain skills and the background to make educated decisions on potential grantees of the MolochDAO. An individual

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[23] *Id.*

[24] *Id.*

[25] Samer Hassan & Primavera De Filippi, *Decentralised Autonomous Organization*, 10 INTERNET POL'Y REV. 2 (2021), https://doi.org/10.14763/2021.2.1556.

[26] Nonstack, *How to Create a DAO?*, DEV. DAO (Apr. 25, 2022), https://blog.developerdao.com/how-to-create-a-dao.

[27] *DAO (Decentralised Autonomous Organization) in Blockchain*, GEEKS FOR GEEKS (Sept. 19, 2022), https://www.geeksforgeeks.org/daodecent ralized-autonomous-organization-in-blockchain/.

[28] *Id.*

(or current members) cannot simply purchase or do some other work to gain membership admittance to MolochDAO on the open market.[29]

A DAO does not have the centralized leadership or management like traditional corporate entities. Rather, it is governed by the members under "democratic and participatory" processes or algorithms. DAOs are funded and usually managed by the members and will generally provide its members with "governance" tokens that are proportional to their investment. A governance token defines and activates a bundle of rights: conditional rights that are held by the token holder; management rights (or management tools) to the physical or digital assets; and access rights to other property that are held by the DAO. DAO governance tokens are generally freely transferable, and their price often varies over time. As the DAO runs on the blockchain, governance token investments are generally done with cryptocurrencies such as Bitcoin (BTC) or Ether (ETH). Besides being a store of value, the cryptocurrencies are used to incentivize and compensate DAO members in governance decision-making through the blockchain—generally participation in DAO decision-making requires the expenditure of a number of tokens representing cryptocurrency, or the expenditure of cryptocurrency itself. Governance tokens represent voting and ownership rights in an analogous way to corporate shares or partnership interests. Depending on the structure of the smart contracts, governance token holdings sometimes determine the weight of a member's vote in various decisions related to the DAO. In addition, because the management of the DAO is conceived as embedded in a "trustless" technical system (arguably incentivizing individual responsibilities and contributions while minimizing the agent-principle problems), a governance token generally will include more extensive governance rights to initiate and amend DAO decision-making in contrast to traditional shareholder rights.[30] Token holders can vote on DAO proposals by initiating a governance token transaction that is subsequently automatically enforced by smart contracts through votes on the blockchain. Tokens can also include more extensive governance rights to initiate proposals and approve/disapprove transactions than would not be available to shareholders or limited partners. In short, governance tokens and rights

[29] *The Original Grant Giving DAO*, MOLOCHDAO, https://molochdao.com/ (last visited Dec. 20, 2023).

[30] *See* Armin Krishnan, *Blockchain Empowers Social Resistance and Terrorism Through Decentralised Autonomous Organizations*, 13 J. STRATEGIC SEC. 41, 46–48 (2020).

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DOI 10.5195/jlc.2023.269 ● http://jlc.law.pitt.edu

and responsibilities are reflective of the less hierarchical, more horizontal business form blended with democratic decisional processes that have been valued by proponents of DAOs.

II. LEGAL RECOGNITION OF DAOS

The legal personhood or legal entity status of a firm is the creation of law. Initially, the law granted legal personality to a group of individuals who undertook certain activities (such as fundraising or state-incentivized monopolistic trade activities), in the form of a joint stock company, or where the inter-generational transfers of property were necessary as part of the business/charitable function of a charitable, religious or business activity. Legal entity status packages together with several features (entity shielding,[31] authority to transact, procedures for legal action, capacity to sue and be sued) that enable the entity can act as a self-directed separate individual. It also serves a coordinating role, because the entity can operate as a single contracting party distinct from the various individuals who own or manage the firm, thus minimizing coordination costs and agency problems.[32] This can facilitate individuals to engage in joint projects with other individuals.

In most jurisdictions, DAOs have not been accorded legal entity status. In part, this is due to the novelty of the DAO organizational structure. This structure, derived from the synergistic use of the blockchain, cryptocurrencies and smart contacts is generally incompatible with the underlying legal presumptions and principles of other business entity forms and management structures, and requires the re-conceptualisation of business entity forms and functions.[33] At the same time, there are unresolved issues regarding the nature of management structure in a smart contract blockchain ecosystem including the scope of member liability, the duties and disabilities

[31] Entity shielding are those rules that give priority to creditors to the firm's assets, protect the firm's assets from the personal creditors, and provide that the shareholders of the corporation cannot withdraw their share of firm assets at will. It also prevents the personal creditors of an individual shareholder to foreclose on the shareholder's share of firm assets. REINIER KRAAKMANN ET AL., THE ANATOMY OF CORPORATE LAW: A COMPARATIVE AND FUNCTIONAL APPROACH 6 (3d ed. 2017); Henry Hansmann et al., *Law and the Rise of the Firm*, 119 HARV. L. REV. 1333, 1343–50 (2006).

[32] *Id.* at 6.

[33] Of course, the issue of legal personhood and entity status is not undisputed in other forms of business organization such as partnership. Scholars continue to debate the elements and power of various entities included in each definition of what may be considered traditional business forms.

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DOI 10.5195/jlc.2023.269 ● http://jlc.law.pitt.edu

between management and members and among members, as well as issues of jurisdictional competence and oversight which must be determined prior to a grant of legal entity status.

In those jurisdictions, where formal registered legal entity status has not yet been granted, DAOs are likely to be considered a partnership, which the Uniform Partnership Act defines as "an association of two or more persons to carry on as co-owners of a business for profit."[34] The conception of a DAO as a partnership does have some advantages. The business form can avoid issues of double taxation, and decision-making and voting procedures may be clarified under the relevant partnership statute. However, partnership status is also potentially onerous in a DAO smart contact and token environment (particularly if the token holders are in different jurisdictions or consider themselves judgment proof). It would require an individual token holder to engage in continuous informed participation in the DAO to avoid liability, a situation that could significantly curtail the fundraising and management potential of the DAO form. It also mandates that DAO members would have the same fiduciary duties to one another as in other partnerships, (as modified and mediated through the blockchain and smart contract structure), a situation that may be incompatible with the DAOs decisional processes and membership structure. Perhaps more problematic for potential members is that, absent legislation, it is likely that DAO membership interests or entitlements held by partner/members would be jointly and severally liable for the DAO debts similar to partners under traditional partnership legislation.

Yet, analogizing a DAO to a partnership is imperfect, and such legal characterization creates additional issues that are not concordant with the partnership structure. First, the decentralised structure of a DAO prevents an easy determination of which partnership law and jurisdiction would control the relationships among partners. Despite similarity among partnership statutes, the ability of partners in law to waive certain liabilities and certain obligations differs across jurisdictions. This can give rise to forum shopping or complex conflict-of-law situations.[35] It is unlikely that the smart contracts

[34] Unif. P'ship Act § 101(6) (Nat'l Conf. Comm'n Unif. State L. 1997).

[35] RESTATEMENT (SECOND) CONFLICT OF LAWS §§ 6, 145, 188 (Am. L. Inst. 1971); *see generally* Lea Brilmayer, *Hard Cases, Single Factor Theories, and a Second Look at the Restatement 2D of*

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governing membership issues would reflect such nuances; and even if they did so, it is not evident that courts in the relevant jurisdictions would apply them. Second, there is an issue about the nature of DAO membership interests for purposes of assuming jurisdiction. Where a DAO owns a real property in a particular location this is not an issue, as jurisdiction would follow *in rem* over the property.[36] However, the issue of the court asserting jurisdiction over the DAO membership interests either as "intangible property" or as a "chose in action" is problematic. The membership or property interest is located on the blockchain, a location that is not evidently within the jurisdiction of any particular court where a claim may need to be brought (nor evidently within the jurisdiction of any court absent an agreement). Moreover, in many instances the interest itself is not accessible to the court or to the parties due to owner authentication or membership (public and private) key issues.[37] This issue is compounded in the international context.

As such, the move to recognize the DAO as an LLC is an advance for DAO fundraising efforts and governance in that it seemingly establishes a jurisdictional forum, sets minimum standards of accountability and good faith among members, and enables a jurisdictional determination of property that is available to the business and creditors. As a DAO governance token represents the initial contribution by each investor, the assignation of legal entity status can assist the determination of the ownership interest as well as enable DAO members to avail themselves of any statutory protections that may be offered by the relevant jurisdiction.

Moreover, a legal entity can be held liable for any civil or criminal liabilities that may arise in the fundraising process, an area that has been rife with malfeasance. The limited liability offered for token membership would facilitate sales and transfer among token holders and assist in the establishment of a secondary market for tokens; this development would positively impact fundraising and capital formation in those businesses that choose a DAO structure. In addition, the statutorily mandated requirements

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Conflicts, 2015 U. ILL. L. REV. 1969 (2015); *see also* Judson A. Crane, *Conflict of Laws Under the Uniform Partnership Act and Uniform Limited Partnership Act*, 66 U. PA. L. REV. 310 (1918).

[36] *See* James McCall, *When DAO's Get Real—Managing Real Property on a Blockchain* (Oct. 17, 2021), https://lexdao.substack.com/p/when-daos-get-real-managing-real.

[37] *See* Crypto Conduct Authority, *The Blockchain and Cryptocurrencies' Biggest Weaknesses* (June 30, 2022), https://cryptoconductauthority.com/tips-for-all/the-blockchain-and-cryptocurrencies-biggest-weaknesses/.

Vol. 42, No. 1 (2023) ● ISSN: 2164-7984 (online) ● ISSN 0733-2491 (print)
DOI 10.5195/jlc.2023.269 ● http://jlc.law.pitt.edu

for DAO articles of organization (such as Wyoming statute) includes the requirement of a publicly available identifier for any smart contract that would be used to manage, facilitate or operate the DAO; this is a particularly important aspect for members, as the misinterpretation of the smart contract used by the DAO and among the members can often be misunderstood or is difficult for less sophisticated members. Finally, the re-orientation of the source of corporate and fiduciary duties coupled with an entrenchment of the notion of a registered business entity as a "real" entity to which management and members owe contractual and fiduciary obligations to each other is particularly advantageous in the DAO context. Given the sprawling nature of the membership interests and the relative opacity (in practice) of smart contracts and governance arrangements, a registered entity can provide a more unambiguous measure of directors and shareholder obligations as well as to provide more accessible remedies for failure to perform legal obligations (e.g., due care, good faith or conflict of interest).

III. FIDUCIARY OBLIGATIONS, GOOD FAITH AND DUE CARE

As an emergent business form DAOs have been designed to address the seemingly intractable agency problems that pervade many business forms, including eliminating inefficiencies and improving business performance.[38] In addition, the DAO is envisioned to be a mechanism that enables the release of emancipatory democratic and entrepreneurial potential that a horizontal organization based on smart contracts and the blockchain can achieve.

IV. EMANCIPATORY BUSINESS FORM

It has been argued that the use of the blockchain and smart contracts by a DAO, like the internet more generally, has emancipatory potential. Emancipatory technology is technology that implicitly or explicitly generates social benefits beyond the direct economic benefit the application of such

[38] *See generally* Christian Catalini & Joshua S. Gans, *Some Simple Economics of the Blockchain* 6–20 (Nat'l. Bureau of Econ. Rsch., Working Paper No. 22952, 2019) (arguing that there are two key costs lowered by blockchain technology—the cost of verification and the cost of networking. These cost savings have direct implications for the design and efficiency of digital platforms, and they open opportunities for new approaches to business, data ownership, privacy, and licensing.).

Vol. 42, No. 1 (2023) ● ISSN: 2164-7984 (online) ● ISSN 0733-2491 (print)
DOI 10.5195/jlc.2023.269 ● http://jlc.law.pitt.edu

technologies has for users, third-party beneficiaries and other market participants. An emancipatory benefit arises where the use of technology generates social marginal benefits that may have no apparent economic value, but which nevertheless provide positive externalities or knock-on effects for society.[39] An example of an emancipatory technology is the provision a stable broadband internet services in developing countries. The DAO form is argued to be emancipatory as its use of the blockchain provides transparency and underpins "distributed trust" that facilitates market transactions, underpins the sharing of knowledge and fosters a better environment for small scale economic activity.[40] In addition, the DAO is said to transform corporate governance and decision-making through the democratic self-governing nature of management or entity decisions. This democratic element is evident in Hsieh et al.'s description of a DAO as a non-hierarchical organization which: record[s] routine tasks on a peer-to-peer, cryptographically secure, public network, and [relies] on the voluntary contributions of their internal stakeholders to operate, manage, and evolve the organization through a democratic consultation process.[41] Democratic governance can empower innovation and leverage members' knowledge and experience into business decision-making in a manner not possible with other business forms. It is realized by the transparent nature of DAO decision-making on the blockchain (allowing members total control over the network's maintenance) and the automated implementation of both the self-governing decision-making process as well as the substance of a decision itself. It also frees up DAO governance from the often fruitless legal, institutional, political and cultural debates and constraints that have enmeshed corporate governance over the past century.[42]

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[39] Jordana J. George & G. Dwayn Whitten, *Blockchain in the Role of Emancipatory Technology* 3–4 (Amer. Conf. on Info. Sys. 2020), https://aisel.aisnet.org/amcis2020/global_dev/global_dev/8.

[40] Maryam Philsoophian & Peyman Akhavan, *The Mediating Role of Blockchain Technology in Improvement of Knowledge Sharing for Supply Chain Management*, 60 MGMT. DECISION 784 (2022).

[41] Hsieh et al., *supra* note 13, at 2.

[42] *See* Dorothy S. Lund & Elizabeth Pollman, *The Corporate Governance Machine*, 121 COLUM. L. REV. 2563 (2021) (arguing that corporate governance in the United States is underpinned by what they term "The Corporate Governance Machine," which is made up of three reinforcing components: law, institutions, and culture. The authors argue that despite the dramatic changes in the normative and governance environment due to such things as ESG, these elements continue to orient corporations' governance and objectives toward advancing shareholder interests).

Vol. 42, No. 1 (2023) ● ISSN: 2164-7984 (online) ● ISSN 0733-2491 (print)
DOI 10.5195/jlc.2023.269 ● http://jlc.law.pitt.edu

Whether the DAO will unleash the emancipatory potential ascribed by its proponents is beyond the scope of this Article. However, such potential depends in part on whether the smart contract decisional structure (as verified by the blockchain) can be tailored to provide for more democratic input and innovative potential. From this perspective, the issue remains uncertain. Smart contracts and the blockchain potentially offer an immeasurable variety of processes and transactions that may be facilitated or transacted.[43] However, shifting away from human agency and human language contacts can create new inefficiencies and difficulties.[44] Additionally, the use of smart contracts in DAO corporate governance remains subject to future regulation as well as the use and status of the cryptocurrencies that have underpinned governance tokens in the DAO decisional structure. There is no question that increased efficiency, productivity and innovation have been achieved across a broad range of industries due to the use of the internet and other digital technologies. Nevertheless, these improvements have not come without some costs, and fall considerably short of the initial emancipatory claims.[45] From job losses, threats to privacy, and monitoring concerns, to the market power of platform companies, the use of the digital internet-based technologies (whether disruptive technologies or innovations[46]) has led to significant social, regulatory and governance issues.[47] At the same time, the democratic potential of digital technologies has been undermined by such things as fraud, social media misinformation, hate speech, terrorism, abuse and harassment

[43] *See generally* Taminad Crittenden, *Stakeholder Control: Sociocracy Is Not Democratic Enough*, MEDIUM (June 20, 2022), https://medium.com/non-violence/stakeholder-control-sociocracy-is-not-democratic-enough-f0b44915c72a.

[44] *See* Sklaroff, *supra* note 5.

[45] John Perry Barlow, *A Declaration of the Independence of Cyberspace*, ELECTRONIC FRONTIER FOUNDATION (Feb. 8, 1996), https://www.eff.org/cyberspace-independence ("We are creating a world that all may enter without privilege or prejudice accorded by race, economic power, military force, or station of birth. We are creating a world where anyone, anywhere may express his or her beliefs, no matter how singular, without fear of being coerced into silence or conformity."). *See also* Wolfgang Kleinwächter, *25 Years of John Barlow's Declaration of Independence in Cyberspace: When Visions Meet Realities*, CIRCLEID (Feb. 6, 2021), https://circleid.com/posts/20210206-25-years-of-john-barlows-declaration-of-independence-in-cyberspace.

[46] *See* CLAYTON M. CHRISTENSEN, THE INNOVATOR'S DILEMMA: WHEN NEW TECHNOLOGIES CAUSE GREAT FIRMS TO FAIL (1997); Joseph L. Bower & Clayton M. Christensen, *Disruptive Technologies: Catching the Wave*, 73 HARV. BUS. REV. 43 (1995).

[47] *See* DIGITAL PLATFORM REGULATION: GLOBAL PERSPECTIVES ON INTERNET GOVERNANCE 1–16 (Terry Flew & Fiona R. Marti eds., 2022).

Vol. 42, No. 1 (2023) ● ISSN: 2164-7984 (online) ● ISSN 0733-2491 (print)
DOI 10.5195/jlc.2023.269 ● http://jlc.law.pitt.edu

on the internet. Combined with earlier democratic deficit issues, such as the problems of asymmetrical information, media misinformation and framing, voter apathy and special interest manipulation of various democratic processes that historically have impacted democratic decision-making, the rise of digital technologies has not led to a democratic renaissance in political or business governance.

V. PRINCIPLE-AGENT PROBLEMS AND DAO MANAGEMENT

The other justification for the DAO business form is that it better addresses the principle-agent problems that are endemic in other types of business firms.[48] These agency problems, which have become a rich area of theoretical and empirical inquiry,[49] arise where the "welfare of one party" (the principle) is dependent upon the actions of another party (the agent). Agency costs arise from the self-serving behaviour of an agent as well as the costs incurred by a firm in preventing or mitigating an agent's self-interested behaviour.[50] The solution to the problem is to encourage the agent to act in the "principle's interest rather than simply in the agent's own interest."[51] The principal in these circumstances "can limit [agent] divergences from his interest by establishing appropriate incentives for the agent and by incurring monitoring costs designed to limit the aberrant activities of the agent."[52] Agency problems arise between a firm's owners and its hired managers, between those who possess a controlling or majority interest and minority, or non-controlling owners (oppression by the majority) and conflicts between the "firm itself—including, particularly, its owners—and the other parties

[48] Jentzsch, *supra* note 7, at 2.

[49] Mark J. Roe, *The Inevitable Instability of American Corporate Governance*, *in* HARV. L. SCH., JOHN M. OLIN CTR. FOR L., ECON., AND BUS. DISCUSSION PAPER SERIES NO. 493, 1 (2004) ("The core fissure in American corporate governance is the separation of ownership from control" and "Separation is the foundational instability of American corporate governance.").

[50] *See generally* Dan R. Dalton et al., *The Fundamental Agency Problem and its Mitigation: Independence, Equity, and the Market for Corporate Control*, 1 THE ACAD. OF MGMT. ANNALS, Dec. 2007, at 1.

[51] John Armour et al., *Agent Problems, Legal Strategies, and Enforcement*, *in* HARV. L. SCH., JOHN M. OLIN CTR. FOR L., ECON., AND BUS. DISCUSSION PAPER SERIES NO. 644, 2 (2008).

[52] M.C. Jensen & W.F. Meckling, *Theory of the Firm: Managerial Behavior, Agency Costs, and Ownership Structure*, 3 J. FIN. ECON. 305, 310 (1976).

Vol. 42, No. 1 (2023) ● ISSN: 2164-7984 (online) ● ISSN 0733-2491 (print)
DOI 10.5195/jlc.2023.269 ● http://jlc.law.pitt.edu

with whom the firm contracts, such as creditors, employees, and customers."[53]

In both corporate and partnership law, agent-principle and majority oppression problems are dealt with through the imposition of equity, statutory law and case law (agency, partnership and/or corporate law), fiduciary law, contract law [express and implied contractual obligations (e.g., good faith and fair dealing), partnership agreements, shareholder agreements, and LLC operating agreements], or are addressed through market mechanisms that align agent-principle interests.[54] In a DAO, the primary means by which this problem is addressed is both organizational and contractual. DAOs seek to eliminate and/or reduce manager/agent roles and discretion through the use of smart contracts and the blockchain and through various mechanisms to enhance membership participation and avoid majority oppression of minority members.[55]

This flat horizontal structure eliminates or mitigates the need for managerial hierarchies and minimizes or eliminates the incentive and opportunity to develop, pursue and implement self-interested behavior by managers apart from the interest of the DAO and DAO members. First, management decision-making and management discretion traditionally left to corporate officers or managing partners is supplanted by membership decisions that use the blockchain. These decisions may be limited to only those traditionally undertaken by boards of directors, but the use of the blockchain can enable members to participate in minute management decisions that would otherwise be outside the purview of shareholders, or in certain instances even the board of directors. Second, the implementation of membership decisions is automated through the use of smart contracts. As such, decisions that would otherwise have allowed for, or necessitated the use of discretion by management are decided by a majority of some quorum of members under the applicable DAO organizing protocols. Third, the DAO mechanism would enable minority members to retrieve their funds from the DAO in the event of majority actions that they disagree with, or there could

[53] KRAAKMANN ET AL., *supra* note 31, at 30.

[54] Margaret M. Blair & Lynn A. Stout, *Trust, Trustworthiness, and the Behavioral Foundations of Corporate Law*, 149 U. PA. L. REV. 1735, 1743 (2001).

[55] A problem every DAO has to mitigate is the ability for the majority to rob the minority by changing governance and ownership rules after DAO formation. Jentzsch, *supra* note 7, at 2.

Vol. 42, No. 1 (2023) ● ISSN: 2164-7984 (online) ● ISSN 0733-2491 (print)
DOI 10.5195/jlc.2023.269 ● http://jlc.law.pitt.edu

be other procedural or substantive limitations on various proposals that may adversely affect minority members.[56]

It is unlikely that the DAO entity structure will eliminate the agent-structure problem or avoid oppression by a majority advertised by its promoters. The usual legal categories to address these problems involve: the law of fiduciary obligations (loyalty and due care), and fair-dealing and good faith, which has both fiduciary and contractual elements.[57] Fiduciary obligations are premised on the idea that certain relationships require the responsible party "to be other-regarding because of the potential for abuse inherent to the agency structure of the relationship."[58] The duty of loyalty controls proscriptive standards including no conflict-of-interest and no-profit rules which "prohibit fiduciaries from receiving unauthorized profits and from acting in the face of unauthorized conflicts" while undertaking their fiduciary mandates.[59] The duty prohibits self-dealing and conflicts-of-interest subject to the principal's consent where certain procedural and substantive safeguards are met. The duty of care outlines a fiduciary's required measure of "care" by establishing a "reasonableness" or "prudential" standard. It requires directors and officers to exercise the level of care that a prudent person would use under similar circumstances and "consider all material information reasonably available" in making business decisions, and that deficiencies in this process will garner liability only if the directors' actions are grossly negligent.[60] This standard, whether objective,

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[56] KRAAKMANN ET AL., *supra* note 31, at 30.

[57] Lyman Johnson, *The Three Fiduciaries of Delaware Corporate Law—and Eisenberg's Error*, *in* FIDUCIARY OBLIGATIONS IN BUSINESS. 57, 57 (Arthur B. Laby & Jacob Hale Russell eds., 2021).

[58] Robert H Sitkoff, *The Economic Structure of Fiduciary Law*, 91 BOS. U. L. REV. 1039, 1049 (2011); Daniel Markovits, *Sharing Ex Ante and Sharing Ex Post the Non-Contractual Basis of Fiduciary Relations*, *in* PHILOSOPHICAL FOUNDATIONS OF FIDUCIARY LAW 209, 215 (Andrew S. Gold & Paul B. Miller eds., 2014) ("A fiduciary relation becomes appealing partly because a principal requires her agent to act in ways that she cannot substantially specify ex ante or cannot directly evaluate ex post. In such cases, fiduciary obligation substitutes for the specification of contract duties and the verification of performance.").

[59] Paul B. Miller, *Dimensions of Fiduciary Loyalty*, *in* RESEARCH HANDBOOK ON FIDUCIARY LAW 1, 16 (D. Gordon Smith & Andrew S. Gold eds., 2018).

[60] *In re* Walt Disney Co. Derivative Litig., 907 A.2d 693, 749 (Del. Ch. 2005). In the duty of care context with respect to corporate fiduciaries, gross negligence has been defined as a "reckless indifference to or a deliberate disregard of the whole body of stockholders' or actions which are 'without the bounds of reason.'" *Id.* at 750.

subjective, or mixed, is measured by what is expected of a reasonable or prudent person in like circumstances.

What the appropriate standards of care and loyalty owed by a fiduciary are in a particular instance is dependent on the context and are often unclear. Similarly, the implied duty of fair dealing and good faith are difficult to determine in any given instance. The duty of good faith and fair dealing underpins the entire contractual relationship and is implied in the performance of the express contractual terms, giving substance to contractual obligations in those areas where the express terms may be ambiguous. The duty is inherent in all agreements and is meant to ensure that the parties to an agreement deal honestly and fairly with each other when performing the contract and addressing gaps in their agreement. Put another way, the duty means that a particular "failure to perform or enforce, in good faith, a specific duty or obligation under the contract, constitutes a breach of the contract or makes unavailable, under the particular circumstances, [a] remedial right or power."[61] The implied duty does "not add to the content of contractual obligation but instead expresses an attitude towards contracts whose substantive obligations are fixed on other grounds."[62] As "[n]o contract, regardless of how tightly or precisely drafted it may be, [can] wholly account for every possible contingency" the implied duty of good faith and fair dealing fills in the "spaces between the written words."[63] This good faith and fair dealing obligation owed by each party centers around the reasonable expectations at the time the contact was entered into to determine where the impugned actions were (or should have been) reasonably considered *ex ante*. "When applying the implied covenant of good faith and fair dealing, the temporal focus is critical . . . . The implied covenant looks to the past, and seeks to enforce terms that the parties would have agreed to themselves had

[61] Kenneth P. Weinberg, *Implied Covenant of Good Faith & Fair Dealing*, MONITOR DAILY (Sept./Oct. 2008) (quoting AdvancMed, LLC v. Pitney Bowes Credit Corp., 2006 WL 36901 (E.D. Ky., 2006)), https://www.monitordaily.com/article-posts/implied-covenant-good-faith-fair-dealin/.

[62] Markovits, *supra* note 58, at 212–13. The Uniform Commercial Code defines good faith as "honesty in fact and the observance of reasonable commercial standards of fair dealing." U.C.C. § 1-201(20) (Am. L. Inst. & Unif. L. Comm'n 2012). It notes that the duty of good faith in performance "does not support an independent cause of action for failure to perform or enforce in good faith"; rather "failure to perform or enforce, in good faith, a specific duty or obligation under the contract, constitutes a breach of that contract." U.C.C. § 1-304 cmt. 1 (Am. L. Inst. & Unif. L. Comm'n 2012).

[63] Glaxo Grp. Ltd. v. Drit LP, 248 A.3d 911, 919 (Del. 2021).

Vol. 42, No. 1 (2023) ● ISSN: 2164-7984 (online) ● ISSN 0733-2491 (print)
DOI 10.5195/jlc.2023.269 ● http://jlc.law.pitt.edu

they considered the issue in their original bargaining positions at the time of contracting."[64]

Proponents of the DAO argue that the smart contract and algorithms dispense with an agent's decisional discretion (and performance in certain instances) while being transparent and "trustless."[65] As such, according to these proponents, legally enforceable fiduciary obligations are unnecessary.[66] It is likely such optimism is misplaced. First, while some agency costs can be mitigated or even eliminated through the use of blockchain technology, certain agency costs are not impacted by blockchain technology, and as such the law of fiduciary obligations needs to reach these agents. Second, the inflexibility, self-executing nature and inability or difficulty in rectifying a transaction involving smart contracts creates a need for intensive up-front attentiveness by specialized DAO staff or members, which in turn can give rise to agency issues and the need for fiduciary obligations. Third, because of the logistical difficulties in managing the blockchain, issues involved with monitoring and managing the interaction of members as well as the cost of processing member proposals on the blockchain, create a need for a "moderator" or "auditor" who must be, or is tasked with overseeing the DAO decisional processes. This entity or individual arguably is, or should be, within the reach of fiduciary law.

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[64] Emps. Ret. Sys. of the City of St. Louis v. TC Pipelines GP, Inc., 152 A.3d 1248 (Del. 2016) (cited in Pat Andriola, *Leap of Faith: Determining the Standard of Faith Needed to Violate the Implied Covenant of Good Faith and Fair Dealing for Delaware Limited Liability Companies*, 58 B.C. L. REV. 1, 2 (2017)); Nemec v. Shrader, 991 A.2d 1120, 1125–26. (Del. 2010) ("The implied covenant of good faith and fair dealing involves a 'cautious enterprise,'" inferring contractual terms to handle developments or contractual gaps that the asserting party pleads neither party anticipated. "'[O]ne generally cannot base a claim for breach of the implied covenant on conduct authorized by the agreement.' We will only imply contract terms when the party asserting the implied covenant proves that the other party has acted arbitrarily or unreasonably, thereby frustrating the fruits of the bargain that the asserting party reasonably expected. When conducting this analysis, we must assess the parties' reasonable expectations at the time of contracting and not rewrite the contract to appease a party who later wishes to rewrite a contract he now believes to have been a bad deal. Parties have a right to enter into good and bad contracts, the law enforces both.").

[65] Kevin Werbach, *Trust, but Verify: Why the Blockchain Needs the Law*, 32 BERKELEY TECH. L.J. 489 (2018).

[66] *See* KEVIN WERBACH, THE BLOCKCHAIN AND THE NEW ARCHITECTURE OF TRUST 1 (2018).

Vol. 42, No. 1 (2023) ● ISSN: 2164-7984 (online) ● ISSN 0733-2491 (print)
DOI 10.5195/jlc.2023.269 ● http://jlc.law.pitt.edu

VI. INEFFICIENCIES IN SMART CONTRACTS AND AGENTS

Smart contracts, either as "code-only smart contracts" or those coded implemented contracts which are used to effectuate various provisions of text-based contracts[67] have a significant potential to revolutionize various business relationships; and have the potential to fundamentally transform social and legal institutions.[68] Once written, smart contracts are immutable; this is both a strength and a weakness. They minimize transaction costs (e.g., negotiation and terms, offer and acceptance, performance) and their use on the blockchain reduces the required amount of trust necessary to enter into a transaction, makes it easier to identify potential counterparties and lessens the amount of monitoring and follow-up that is required in a transaction.[69] Smart contracts also have the potential to reduce bargaining disparities and ensure more effective markets because they can prevent powerful parties from opportunistically breaching the contract or extracting a beneficial modification that disadvantages weaker parties.[70]

Yet the very inflexibility of the smart contract can potentially limit its widespread adoption in business governance and business interactions. A potentially serious problem that can involve a DAO is where a member loses the cryptographic private key, or someone steals or misappropriates the key. In these circumstances, the member will be unable to gain access to the DAO and exercise the member's governance and financial rights. At the same time, unless the private key is locked, the individual or entity that has misappropriated a key can exercise whatever rights the member may have without fear of identification. Regaining access to the key through legal mechanisms simply may not be possible due to technical barriers.

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[67] Stuart D. Levi & Alex B. Lipton, *An Introduction to Smart Contracts and Their Potential and Inherent Limitations*, HARV. L. SCH. F. ON CORP. GOVERNANCE (May 26, 2018), https://corpgov.law.harvard.edu/2018/05/26/an-introduction-to-smart-contracts-and-their-potential-and-inherent-limitations/.

[68] Sklaroff, *supra* note 5, at 267.

[69] Marc-David L. Seidel, *Questioning Centralized Organizations in a Time of Distributed Trust*, 27 J. OF MGMT. INQUIRY 40 (2018).

[70] Michael del Castillo, *Relax Lawyers, Nick Szabo Says Smart Contracts Won't Kill Jobs*, COINDESK (Dec. 8, 2016, 8:55 AM), http://www.coindesk.com/nick-szabo-lawyers-jobs-safe-in-smartcontract-era/ [https://perma.cc/6RX3-U2JE] ("The result is that while traditional law is relatively flexible, involving interpretation and judgment (and can therefore be corrupted), a software version is 'rigid and predictable.'").

Vol. 42, No. 1 (2023) ● ISSN: 2164-7984 (online) ● ISSN 0733-2491 (print)
DOI 10.5195/jlc.2023.269 ● http://jlc.law.pitt.edu

Where the parties or a particular aspect of a transaction are not covered by the smart contract code, contractual disputes can be difficult to resolve using the courts. The technical nature of the problems (actual or potential) either with a key, the smart contract code or modifying the code to incorporate new conditions, would generally require most DAO members and outside parties dealing with the DAO to contract with and rely upon, trustworthy, technical experts or specialized agents to ensure that the contractual agreement is accurately captured by the code, and/or that the code (as written by a third party or other member of the DAO) is accurate. This creates negotiation costs and uncertainties because the parties must anticipate and precisely define terms and account for all future scenarios that may occur under the contract; a difficult, expensive, and in some cases an impossible task in certain business circumstances.[71] As noted by Sklaroff, parties manage these issues and costs by using loosely defined contract terms or standards which are given more precise meaning during the course of

[71] *Legal Statement on Cryptoassets and Smart Contracts*, UK JURISDICTION TASKFORCE (Nov. 2019), file:///E:/DOA/6.6056_JO_Cryptocurrencies_Statement_FINAL_WEB_111119-1.pdf ("At first blush, a smart contract that exists purely in code is not susceptible to the exercise of contractual interpretation at all, in part because interpretation is about ascribing meaning to natural language, and in part because code is generally clear, unambiguous and self-consistent (albeit that is not always the case, as discussed below). However, it is unnecessary to declare smart contracts as a special category of contracts to which the normal rules of interpretation are dis-applied. Rather, a smart contract consisting solely of code with no natural language element can in most circumstances be seen as an extreme example of a contract whose language is clear, with the result that there is no justification to depart from it. The practical result, however, is the same: we do not believe there are many circumstances in which an English court would hold that the 'meaning' of a smart contract consisting solely of code was something other than that expressed in the code. That is not because there is anything special about such a smart contract. Rather, it reflects the entirely conventional position that where language is clear and unambiguous (which code generally is), it would require very unusual circumstances for a judge to conclude that the objective meaning was other than what the words (code) said. Although the code for a smart contract can *generally* be expected to be clear and unambiguous, this will not always be so. For example, a program might use a construction that is ill-defined in the programming language being used, with the result that it does not have a single ascertainable 'meaning'; or different compilers might treat a particular programmatic construction in a different way, leading to a question as to which behaviour was actually intended; or the running order of different parts of the code may affect its behaviour and thus, potentially, its 'meaning.' In some cases, such ambiguities might be resolved by reference to other parts of the code that make the intended behaviour clear; however, there will likely also be cases where examination of the code alone will not be sufficient to ascertain contractual intention and, just as with natural language contracts, a judge will need to look beyond the four corners of the code to interpret it. A judge's task when interpreting a smart contract, then, is to determine, looking at the contract as a whole, and the admissible evidence, what the parties objectively intended their obligation to be." [citations omitted]).

Vol. 42, No. 1 (2023) ● ISSN: 2164-7984 (online) ● ISSN 0733-2491 (print)
DOI 10.5195/jlc.2023.269 ● http://jlc.law.pitt.edu

performance or subsequent negotiation.[72] In addition, smart contracts can increase the costs of responding to a breach by removing enforcement flexibility. In most instances, parties prefer to avoid litigation and resolve contract disputes informally with minimal cost. The inflexibility of the smart contract, should anything be amiss, invariably leads to costly and unpredictable litigation due to the self-implementing nature of the smart contract code.[73]

VII. THE BLOCKCHAIN

"Blockchain provides an encrypted ledger for smart contracts that are essential for the integrity and security assurance of smart-contract executions."[74] As noted by the California Blockchain Working Group, distributed ledger technology appeals to many individuals who support reducing hierarchy and increased personal agency because of its distributed authority, decentralised governance, self-affirming identity, and data privacy.[75] In business transactions, the technology makes it less difficult to identify potential counterparties, lessens the amount of trust needed between parties to consummate and implement a transaction, and reduces the costs of monitoring the performance of the contract.[76] It is likely that blockchain based contracts will be increasingly used in business and governmental transactions in the coming decades.[77]

Yet despite its promise, the blockchain has costs in verification and networking that in turn have implications for agency, market structure and competition.[78] Verification costs involve the mechanisms by which the products, services, property, or store of value (e.g., fiat currency) are

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[72] Sklaroff, *supra* note 5, at 277.

[73] *Id.* at 277–78.

[74] Vimal Dwivedi et al., *A Formal Specification Smart-Contract Language for Legally Binding Decentralised Autonomous Organizations*, 9 IEEEACCESS 76069, 76070 (2011).

[75] *See* Crittendon, *supra* note 43.

[76] Seidel, *supra* note 69.

[77] Adam Levy, *15 Applications for Blockchain Technology—Learn About All the Different Applications and Use Cases for Blockchain Technology*, THE MOTLEY FOOL (July 13, 2022), https://www.fool.com/investing/stock-market/market-sectors/financials/blockchain-stocks/blockchain-applications/.

[78] Christian Catalini & Joshua S. Gans, *Some Simple Economics of the Blockchain*, 63 COMMC'N OF THE ACM 80 (2020).

Vol. 42, No. 1 (2023) ● ISSN: 2164-7984 (online) ● ISSN 0733-2491 (print)
DOI 10.5195/jlc.2023.269 ● http://jlc.law.pitt.edu

substantiated by both parties to be correct under the terms of the contract. In usual circumstances, the parties can directly assess the quality of the goods, service, etc. and the authenticity of the currency. The only intermediary involved is the financial institution. Intermediaries are important to transactions and the function of the market because they reduce information asymmetries and potential for moral hazard by providing trustworthy exchange mechanisms, imposing additional disclosures and monitoring participants.[79] Where activities and transactions are all online "on-chain," activities that are recorded, blockchain digitalisation can significantly reduce or minimise costs. However, where there is a link with offline "off-chain" events, including such things as Anti-Money Laundering regulations and/or due diligence such as Know-Your-Customer investigations, there are significant costs that cannot benefit from low-cost verification. When considering these issues in terms of DAO governance, it is likely that all decision-making processes, be they internal to the DAO or with third parties are necessarily going to involve some cost—and some discretion. These costs are added to costs related to the maintenance of the network on which the smart contracts run. As the costs for third-party verification and the use oracles are paid for by cryptocurrency ("gas" on Ethereum) or utility tokens (representing cryptocurrencies or given for free) the access to the beneficial elements of the blockchain can be limited.[80] Invariably the differential access to "gas" among members will exclude participation in various decisions. Additionally, the widespread application of the blockchain requires a clear legal framework, particularly concerning jurisdiction, conflict or laws and remedies which have yet to be addressed. This legal and regulatory vacuum increases the legal and financial risks of blockchain transactions and militate against the dispensation of agents advocated by proponents.

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[79] *Id.* at 83.

[80] Toshendra Kumar Sharma, *What is a Blockchain Oracle? A Detailed Overview*, BLOCKCHAIN COUNCIL (June 8, 2020), https://www.blockchain-council.org/blockchain/what-is-a-blockchain-oracle-a-detailed-overview/ ("Blockchain oracles are the services that send and verify real-world occurrences and submit information to smart contracts, triggering state changes on the blockchain. Blockchain oracles are said to be third-party services that provide smart contracts with external information. They provide a link between off-chain and on-chain data. These are vital in the blockchain ecosystem because they expand the scope in which smart contracts can operate.").

Vol. 42, No. 1 (2023) ● ISSN: 2164-7984 (online) ● ISSN 0733-2491 (print)
DOI 10.5195/jlc.2023.269 ● http://jlc.law.pitt.edu

VIII. THE PRACTICAL NECESSITY OF A MONITOR/MODERATOR

This is not to suggest that the use of the blockchain, smart contacts and the DAO business form are not going to significantly increase in use and complexity across the business world in the coming years. Rather, the inherent issues involving the use of smart contracts necessitate the continued use of agents and agent discretion in many business circumstances, including DAOs. As such, the use and intrinsic nature of smart contracts continues to incorporate notions of good faith and loyalty, the inherent inequality between the parties[81] or the presence of vulnerability that have been the woof and warp of fiduciary obligations since the law was developed. In such situations, it is unrealistic to assume that such activities should be beyond the reach of fiduciary law. The use of discretion, and information asymmetries between/among members or agents and members of the DAO, and the potential that the use of such discretion will change legal relationships among members, and with third parties interacting with the DAO necessitates the extension of fiduciary law. It is inescapable, despite the use of smart contracts, that in some situations, the agents necessarily will perform such decisional process and responsibilities where members as principles have additional legal protection besides those written in the smart contract code embedded in the DAO structure.

IX. PROBLEMS WITH THE ABILITY OF LLC MEMBERS TO CONTRACT OUT OF FIDUCIARY OBLIGATIONS

The Wyoming DAO Limited Liability Company Act (DAO Act), like many state LLC statutes across the United States allows DAO members to contractually waive those fiduciary duties that would otherwise apply to management and members.[82] Under the DAO Act, "no member" of a DAO

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[81] Leonard I. Rotman, *Fiduciary Law's "Holy Grail": Reconciling Theory and Practice in Fiduciary Jurisprudence*, 91 BOS. UNIV. L. REV. 921, 930–31 (2011).

[82] WYO. STAT. ANN. § 17-31-110 (2021) "Standards of conduct for members" of the Decentralised Autonomous Organization Supplement reads "Unless otherwise provided for in the articles of organization or operating agreement, no member of a decentralised autonomous organization shall have any fiduciary duty to the organization or any member except that the members shall be subject to the implied contractual covenant of good faith and fair dealing." This differs from the Wyoming Limited Liability Company Act Section 17-29-409(g), "Standards of conduct for members and managers," which

shall have any fiduciary duty to the organization or any member except "the implied contractual covenant of good faith and fair dealing."[83] Unlike the general Wyoming LLC statute, the DAO Act does not provide default fiduciary duties that would apply unless members "opt-out" or contract out of these duties; rather the DAO statute establishes a default rule that the law will not impose any duties other than good faith and fair dealing absent a contractual obligation in the operating agreement.[84]

The issue of whether it is desirable to enable members to opt-out of all fiduciary duties in favor of the minimal duties of good faith and fair dealing is beyond the scope of this Article. Fiduciary "Traditionalists" argue, among other things that the use of contractual waivers for fiduciary duties is a fundamental confusion of legal doctrine and company law, and privileges a false notion of efficiency at the expense of other important social values such as fairness and trust.[85] They also argue that contractual waivers overestimate the prescience of the parties, ignores the parties unequal bargaining position[86] and have a detrimental effect on the broader economy as fiduciary rules will be regularly discarded as waivers become standard.[87] On the other hand, those who argue for the ability to contract out of fiduciary obligations conceive of these rules as comprising a set of default rules and deterrence against poor behavior, which members should be free to contract out of should they so desire. Easterbrook and Fischel argue that corporate fiduciary

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extends certain fiduciary duties of loyalty and care to members and managers while providing a larger set of duties for managers. WYO. STAT. ANN. § 17-29-409(g) (2015).

[83] *Id.*

[84] This is in contrast to other state LLC statutes. For example, the Delaware Limited Liability Company Act, DEL. CODE ANN. tit. 6, § 18-101 (2022), establishes certain default statutory rules that apply only where the members have not either waived or modified them in the LLC operating agreement. Members under the Delaware Statute are free to contract among themselves on a large number of issues including the standards governing the internal affairs of the LLC, and the statute is designed to "give the maximum effect to the principle of freedom of contract and to the enforceability of limited liability company agreements." DEL. CODE ANN. tit. 6, § 18-1101(b) (2022). Members are also free to choose to govern their relationships exclusively by contract, without regard to corporate-style fiduciary duties of loyalty and care provided that the operating agreement cannot "limit or eliminate liability for any act or omission that constitutes a bad faith violation of the implied contractual covenant of good faith and fair dealing." DEL. CODE ANN. tit. 6, § 18-1101(e) (2022). Waivers in the operating agreement that disclaim fiduciary duties must be made in clear and unambiguous terms.

[85] *See* Melanie B. Leslie, *Trusting Trustees: Fiduciary Duties and the Limits of Default Rules*, 94 GEO. L.J. 67 (2005).

[86] TAMAR FRANKEL, FIDUCIARY LAW 232 (2011).

[87] Larry E. Ribstein, *Fencing Fiduciary Duties*, 91 B.U. L. REV. 899 (2011).

Vol. 42, No. 1 (2023) ● ISSN: 2164-7984 (online) ● ISSN 0733-2491 (print)
DOI 10.5195/jlc.2023.269 ● http://jlc.law.pitt.edu

standards are, and should be, default rules which are "off the rack" contract terms that designed to maximize shareholder value.[88]

As noted by Frankel the presumption that fiduciary rules may be waived is based on the liberal idea that individuals should be free to govern their relationships unless good reasons exist to impose mandatory rules.[89] To these scholars, fiduciary obligations perform a "gap filling function" as they allow for contractual terms to be implied into the agreements, so it is not necessary that the parties agree to everything in advance.[90]

The contractual perspective, which allows for the waiving of fiduciary duties has been accepted by most states with LLC statutes. The extent to which the LLC statutes provide for waiving of duties varies across states. Ribstein and Keatinge identify five approaches to contracting out of fiduciary duties for LLCs.[91] The Delaware approach, which confers on members a broad freedom of contract in contracting out of fiduciary duties (outside of the implied duties of good faith and fair dealing) has become widely used.[92] The Uniform Limited Liability Company Act (ULLCA) takes a slightly different approach and provides a non-exclusive statutory definition for each duty, then leaves it up to the parties (and the courts) system to clarify, supplement, and interpret the content and scope of each duty.[93]

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[88] Frank H. Easterbrook & Daniel R. Fischel, *Contract and Fiduciary Duty*, 36 J.L. & ECON. 425, 427, 437 (1993) (The authors noted that that "[f]iduciary duties are not special duties; . . . [a]ctual contracts always prevail over implied ones).

[89] FRANKEL, *supra* note 86, at 235.

[90] Tamar Frankel, *Fiduciary Duties as Default Rules*, 74 OR. L. REV. 1209, 1231 (1995).

[91] LARRY E. RIBSTEIN & ROBERT R. KEATINGE, RIBSTEIN AND KEATINGE ON LIMITED LIABILITY COMPANIES, app. 9-6 (2015) (tabulated statutory provisions).

[92] Lewis H. Lazarus & Jason Jowers, *Fiduciary Duties of Managers of LLCs: The Status of the Debate in Delaware*, AM. BAR REV. (Feb. 28 2012), https://www.americanbar.org/groups/business_law/resources/business-law-today/2012-february/fiduciary-duties-of-managers-of-llcs/#%3A~%3Atext%3DHowever%2C%20in%20allowing%20fiduciary%20duties%20to%20be%20waived%2Cby%20provisions%20in%20the%20limited%20liability%20company%20agreement....%22; DEL. CODE ANN. tit. 6, § 18-1104 (2022) ("In any case not provided for in this chapter, the rules of law and equity, including the rules of law and equity relating to fiduciary duties and the law merchant, shall govern."). Commentary for the Act on the section stated that the LLC agreement can waive fiduciary duties of members with an express statement to that effect. This provides that the LLC members can manage fiduciary duty with provisions in the operating agreement that restrict, limit, or expand these duties within the boundaries of fair dealing and good faith and allows each LLC to define its own fiduciary relationships if it so chooses.

[93] Uniform Limited Liability Company Act §§ 105 and 409 impose a fiduciary duty of loyalty and a fiduciary duty of care absent a modification or waiver in the LLC operating agreement. Uniform Limited Liability Company Act §§ 105, 409 (Unif. L. Comm'n 2013).

Initially various LLC statutes reflected the conception that an LLC is entirely a species of contract. The very flexibility that the organizing agreement provided members, coupled with limited liability, was considered to be its major contribution to business efficiency. As such, it is presumed that members have no inherent expectation of fiduciary obligations absent an express contractual provision.[94] Members needed to "opt-in" to fiduciary obligations (notwithstanding the continuing obligations of good faith and fair dealing). This led to a significant amount of litigation. As a result of these litigated issues many states, including Wyoming, have amended their LLC statutes and modified the waiver provisions to require fiduciary obligations as default provisions and allow for members to waive or modify fiduciary duties in the operating agreements. Where there is no language of waiver or modification in the agreement however, fiduciary duties (as understood in common law or as defined in statute, for example, ULLCA Section 409) apply. In effect, the new approach, while providing a broad scope for contract, establishes fiduciary obligations as a set of default rules which members "opt-out" of in the operating agreement.

As mentioned above, the Wyoming DAO Act did not incorporate the changes which required members to "opt-out" of fiduciary duties when Wyoming amended its broader LLC Act in 2012.[95] Rather it provides the members must explicitly "opt-in" to fiduciary protections. This is inappropriate and problematic. First, it is evident that the underlying smart contracts and algorithms which govern the DAO can be difficult for investors/members to understand. While the DAO Act provides a means to identify and determine the content of the smart contracts, there is an issue that less sophisticated or less technologically aware members could be subject to oppression or suffer from overly permissive conflict of interest provisions. Moreover, even where there is a concrete understanding of the content of the particular governance smart contract, the quasi-anonymous membership structure of many DAOs (providing the potential for one member to acquire additional membership interests without other members knowledge of the actual owner) the membership structure and voting arrangement are unlikely to provide sufficient protection. Without the

[94] Sandra K. Miller, *The Role of the Court in Balancing Contractual Freedom with the Need for Mandatory Constraints on Opportunistic and Abusive Conduct in the LLC*, 152 U. PA. L. REV. 1609, 1616 (2004).

[95] WYO. STAT. ANN. §§ 17-29-110, 17-29-409 (2022).

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purchase and deterrence of *ex ante* fiduciary obligations, it is likely that non-remedied malfeasance could occur. In Wyoming, this issue would be exacerbated in the recent amendments to the DAO Act relating to the required quorum for membership voting. The new amendment enables a DAO to modify the minimum threshold (i.e., establish its own definition of a quorum within its articles of organization) of the DAOs overall membership necessary to participate in proposal voting for a proposal to be valid if passed.[96]

Second, the DAO structure, despite its horizontal governance, necessitates the existence of a moderator/agent which may address any shortcoming in the blockchain, as well as aggregate and coordinate member governance proposals. The existence of such an entity or individual, coupled with the cost of processing member proposals on the blockchain, is an analogous situation to which the law has applied fiduciary obligations in a corporate and partnership setting. While a precise definition of the fiduciary relationship and the implications of the relationship are numerous, a useful definition is found in Justice Wilson's discussion in *Frame v. Smith* in the Supreme Court of Canada.[97] Wilson observes that a fiduciary relationship should be imposed where the relationship possesses three general characteristics: (1) the fiduciary has scope for the exercise of some discretion or power; (2) the fiduciary can unilaterally exercise that power or discretion so as to affect the beneficiary's legal or practical interests; and (3) the beneficiary is peculiarly vulnerable to or at the mercy of the fiduciary holding the discretion or power.[98] Using Wilson's notion, it is evident that a DAO moderator has decisional authority and the discretion to put forth certain membership proposals in a situation where there is an asymmetry of knowledge vis-à-vis the membership, as well as the ability to change a member's and the LLC's legal and financial position. As noted by Minn:

> The fiduciary duty of loyalty should have its place in governing DAOs, even when the fiduciary's powers and functions over a beneficiary's assets are largely automated (and thus attenuated). As long as there exists some degree of centralization of power, which is inevitable, a fiduciary can exert some degree of

[96] SF0068, 66th Leg., 2022 Budget Sess. (Wy. 2022).
[97] Frame v. Smith [1987] 2 S.C.R. 99 (Can.).
[98] *Id.* at 102.

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DOI 10.5195/jlc.2023.269 ● http://jlc.law.pitt.edu

> discretion over the beneficiary's asset, and that leaves room for misappropriation.[99]

In addition, the DAO structure makes it difficult for members to monitor their own interests. The moderator is often the only entity that has full access to all members (and these may even by pseudo-anonymous) such that the membership, unlike shareholders in a corporation, have less ability to access the names and contacts of members in the event there are issues with management, or there is a desire to change DAO governance smart contracts. The aggregation, monitoring and clearance process requires a mechanism for the determination of sufficiency of the proposal and the accompanying information to make informed voting decisions, circumstances that should necessarily require fiduciary duties.

Third, there is a need for someone to provide DAO token holders with sufficient information to permit them to make informed voting decisions. The pseudonymity and dispersion of investors often can make it difficult for them to exchange information or combine efforts to affect change. These problems were evident in the problems with the failed "The DAO" entity in 2016. Unfortunately, the problem cannot readily be addressed by LLC statutory provisions.

Fourth, even where the moderator has minimal discretion and the DAO is algorithmically managed, the problems of conflict-of-interests and oppression are unlikely to be accepted by the Courts based on the "opt-in" provisions for fiduciary duty of the Wyoming LLC DAO statute or other statutes. Some state courts that have interpreted "opt-in" or "opt-out" provisions in their LLC acts broadly, and they continue to permit common law claims and defenses that have not been specifically abrogated.[100] While the language of the Wyoming statute, like that of other states[101] looks to

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[99] Kyung Taeck Minn, *Towards Enhanced Oversight of "Self-Governing" Decentralised Autonomous Organizations: Case Study of the DAO and Its Shortcomings*, 9 J. INTELL. PROP. & ENT. L. 140, 164 (2019).

[100] *See, e.g.*, Bushi v. Sage Health Care, PLLC, 203 P.3d 694, 699 (Idaho 2009) (interpreting Idaho's LLC statute and concluding that members of an LLC owe one another fiduciary duties); Pannell v. Shannon, 425 S.W.3d 58, 82 n.22 (Ky. 2014) (interpreting the same provision as codified in Kentucky's LLC statute as permitting a common law laches defense).

[101] *See, e.g.*, OHIO REV. CODE ANN. § 1705.281 (West 2017) ("[t]he only fiduciary duties a member owes to a limited liability company and the other members are the duty of loyalty and the duty of care set forth in divisions (B) and (C) of this section."); *see also* HAW. REV. STAT. § 428-409 (2017); OR. REV. STAT. § 63.155(1) (2017); VT. STAT. ANN. tit. 11, § 4059(a) (2018); WASH. REV. CODE § 25.15.038 (2018).

statutorily eliminate common law fiduciary duties, it is likely that the opt-in provisions, despite the clarity, will not be accepted by the courts when challenged. While the DAO is certainly a product of contract, the notion that it is conceptually only a "creature" of contract in a manner similar to other LLCs strains the analogy inappropriately as that suggests that DAO internal governance may be regulated in a manner consistent with other types of business entities—something it has been specifically designed not to do. A DAO LLC is fundamentally different from a traditional LLC (and corporation) due to the pseudo-anonymous nature of its membership identity, the necessity and prevalence of smart contracts implementing and defining the operating agreement, and the "take-it or leave-it" adhesive nature of the membership contract smart contract and governance regime.

Fifth, once a DAO is established it is difficult, for technological and jurisdictional reasons, to be able regulate member relationships in a manner that would even be consistent with good faith and fair dealing—the minimal common law standards governing relationships between and among members and the LLC. On one hand, this is because these concepts are often difficult to apply and are contextually triggered—arising from a "real-life" randomness that is not easily replicated in the digital environment. The very malleability of the governance and structure, difficulty in identifying members and their location, jurisdictional and different legal standards, the rigidity of smart contracts, the inability of the courts to even provide remedies where a violation of law has occurred (because of such issues as the inability to access a private key or the inability to reach the assets of a misfeasor because they are in crypto-currency) all militate against allowing DAO LLCs to contract out of fiduciary duties as these are important rules that apply to good faith and fair dealing. DAO management and members should be subject to the full weight of fiduciary obligations towards each other and the DAO.

X. CONCLUSION

DAOs are entities established through digital ledgers with members interacting with it through pre-programmed computer codes. This allows the DAO to exist without a centralized governing body. A DOA's governance is undertaken through the use of blockchain, and the pre-programmed computer codes are smart contracts used to build the various blocks that reflect transactions between the members of the blockchain. The lack of a

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centralized authority in DAOs has been touted as a prominent feature that would give decision-making powers over to members that participate in the blockchain, but the exact legal relationship between the entity and members is sometimes hard to define.

Yet, even though the recognition of DAOs as legal entities is a positive step toward extending legal protections to DAO members and third parties who engage in transactions with DAOs, the use of smart contracts and the blockchain do not adequately address the legal and governance issues the DAO purports to solve. It is important the law reach these relationships as they have a larger social significance. The DAOs, like other business forms, should reflect broader social and economic goals that are consistent with the construction and preservation of social and economic interdependency.[102] Originally, the combination of members' decision-making through smart contracts and the blockchain has been seen by some commentators as a means to better address corporate governance issues.[103] The blockchain offers transparency by revealing the actions taken by the participants. This allows the DAOs to self-govern, without the need of maintaining a centralized entity such as a board of directors. The Wyoming DOA Act has additional problems in that it does not discuss the definition and requirements for smart contracts and blockchains that form the DAO LLC, raising the question as to whether categorizing DAOs as a type of LLC actually provides adequate protection to the members that interact with DAOs.

All of this highlights the challenges that still exist in creating a comprehensive legal construct to regulate DAOs. While DAOs have been seized upon by proponents as a means of rectifying the agent-principle problem inherent in the corporate structure, DAOs cannot completely eliminate the problems related to asymmetrical information, powers, and incentives different individuals may have within the DAO structure. This continuing problem, in turn, leads to an inquiry into the appropriate conceptualization of a DAO as a legal entity. This legal entity should consider incorporating considerations that address the legal relationships of DAOs with its members, the obligations owed by DAOs to third parties, and the obligations owed by the members and management of DAOs.

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[102] Rotman, *supra* note 81, at 934.
[103] Murray et al., *supra* note 14, at 623.

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