

A Decentralized Autonomous Organization (DAO) of DAOs

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Abstract

A well-governed DAO of DAOs can provide technological and community solutions for the evolution of the DAO ecosystem. Through its technological infrastructure designs, a DAO of DAOs can create, improve and expand well-functioning and well-governed networks of DAOs. That DAO infrastructure, in turn, improves most of the applications and uses of digital assets and decentralized commerce for the greater good of society. This article examines the core features of a possible DAO of DAOs design, its ability to expand the DAO ecosystem, and the design's uses in business and society.

Key Words: DAO of DAOs, Decentralized Autonomous Organization, Decentralized Governance, Legal Design, Digital Assets, Decentralized Finance, Blockchain, Start-up, Decentralized Commerce, Emerging Technology, Token Models, Incentive Design, Tokens, Distributed Ledger Technology, Decentralized Infrastructure, Reputation Staking

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Introduction

DAOs have the potential to upgrade business and society on multiple levels. The business applications of DAOs are near limitless. DAOs help upgrade digital assets across the spectrum of applications and uses. DAOs instantiate the need for truly global borderless entities that coordinate agency relationships, enforce expectations, and limit liabilities via smart contracts. This includes digital assets that can be used as mediums of exchange, speculation,² payment rail for non-expensive cross-borders money transfer, and non-monlegal wrapperry uses such as time stamping.³ Additional use cases of DAOs include financial transactions, secure voting, autonomous organizations, company management, freedom of speech networks, online games, crowdfunding, and speculation, among many other possible applications that cannot be foreseen.⁴

In the 2020s, Ethereum was still the leading smart contracting platform for DAO creation. Ethereum's programming language, Solidity, enables the development of smart contracts⁵ in conjunction with Ethereum's Virtual Machine (EVM), upon which every Ethereum node runs to maintain consensus. EVM is Turing-complete, meaning that it can perform calculations that any other programmable computer is capable of, enabling execution of code exactly as intended.⁶ This is a feature of the Ethereum network and other 3rd generation blockchains that enables smart contracts and a high level of flexibility in digital innovation, which makes the platform attractive to developers. Other networks are developing upgrades to blockchains that enhance smart contracting and associated DAO features.

The limitations of the Ethereum platform, such as transaction throughput and gas fees, are creating a need for next generation blockchain technology and smart contracts. DAOs help facilitate this evolution.

The concept of a DAO fails if it becomes centralized. Centralization is omnipresent in computing systems, economics, and society at large. Yet centralization in governance is perhaps the largest threat to a DAO. With increasing centralization comes increasing risk of an organization's unifying principles changing or being ignored over time. Decentralization forces the shared understanding and shared social contract to be of primary importance for the life of the organization. Access to a DAO and participation

² Angela Rogojanu and Liana Badea, "The Issue of Competing Currencies: Case Study – Bitcoin," *Theoretical and Applied Economics* 21, no. 1 (2014): 103-114; Paola Ceruleo, "Bitcoin: A Rival to Fiat Foney or a Speculative Financial Asset?" (Master's Degree Thesis, LUISS Guido Carli University, 2015).

³ Robleh Ali, John Barrdear, Roger Clews and James Southgate., "The Economics of Digital Currencies," *Bank of England Quarterly Bulletin* 2014 Q3 (2014): 276.

⁴ Zvezdin Besarabov and Todor Kolev, "Predicting Digital Asset Market Based on Blockchain Activity Data," arXiv (Oct. 15, 2018).

⁵ "Crypto Glossary," CoinMarketCap, accessed June 22, 2020, <https://coinmarketcap.com/glossary>.

⁶ CoinMarketCap, "Crypto Glossary."

in governance needs to include information from the edges of the system. Decentralized governance has to be dynamic and evolutionary in order to avoid for the system to become, over time, centralized and brittle. Most DAOs fail to accomplish this.

Legal centralization is another core threat to the DAO evolution. Tying the legal existence of a DAO to any forms of existing legal and jurisdictional frameworks typically results in the need for a representative in the chosen legal framework and jurisdiction, which, in turn, centralizes the DAO and results in the failure of the DAO concept. From the perspective of regulatory competition, one jurisdiction may one day offer a DAO legal framework that removes the need for a representative in that jurisdiction. However, even if this should exist one day, a significant risk remains that such a DAO entity could be labeled a partnership with joint and several liability for its members in a given jurisdiction. Only a jurisdiction that gives the DAO limited liability as an entity and accepts its independent status without the need for representation may truly be favorable for DAO concepts. Such jurisdiction would have to accept that the DAO is a virtual organization based on code that is accessible from any computer with an internet connection and cannot be jurisdictionally captured. The implication is that such DAO on each computer in any country is effective if another computer in a given country connects with and interacts with the code.

Supporting DAOs is critical, now more than ever. Because of platform centralization, developers have in many cases lost the ability to influence the direction of what they are building. Platform centralization is particularly detrimental in the developer community because it is the developer community that brings information in from the edges of the system/society and helps form a consensus on emerging technologies for society. With only a limited ability to influence the direction of product/technology development, the developer community is less able to deploy its unique talents and skills in creating technology solutions for the greater good of humanity. This, in turn, has negative socilegal wrapperl ramifications. If the developer community is restrained from building technology it sees as cutting edge and beneficial for society, societies' ability to experiment with such new technology solutions is severely hampered. Without socilegal wrapperl experimentation with cutting-edge technology, and increasing mainstream adoption, in turn, it is more problematic to increase innovation for the greater good of society. In other words, if the developer community does not receive the support it needs in developing decentralized infrastructure solutions, society at large suffers.

DAOs and networks of DAOs offer the ability to level the playing field again, and enable developers to determine with community consensus what technology should be created. Teams of developers can work with their respective DAO community to promulgate, design, and obtain support for their respective projects. Rather than convincing legacy

technology leaders and their respective platforms, teams of developer need to convince their own peers that their proposed technology is workable and creates significant solutions. The community peer review dictates projects, funding, and outcomes and provides feedback mechanisms. DAO communities have started to introduce healthier governance mechanisms that help them grow their influence in technology development. DAOs have the potential to form the foundation for technology development that serves the greater good of society.

DAO Limitations

At the beginning of the 2020s, DAOs are still subject to significant limitations. Such limitations include path dependencies, regulatory uncertainty, lingering suboptimal incentive designs, public policy, as well as market, economic, and technical limitations, among others.

Path Dependencies

The original DAO has a lasting impact on emerging DAO designs. It created core commonalities and associated path dependencies in future generations of DAOs. The core common denominator for all DAO token members is the unifying desire to optimize the DAO token value. Accordingly, performance assessment in the DAO structure is based on value optimization, not on hierarchical or political processes. On the upside, token holders and contractors work towards a common goal of optimizing the DAO and the token value and non-performance reputational penalties are free from racial or cultural biases and associated implications as the token holders are unlikely to even know each other. Yet, the focus on the value enhancement of fungible tokens can lead to short-termism and may ignore ethical and governance issues.

DAO developers are also subject to path dependencies that undermine the evolution of decentralized DAO designs. Organizational communication structures will invariably influence future designs. While groups of DAO developers certainly influence DAO designs with their collective assumptions about how their intended DAO users will engage with the DAO, the inherent structure and approach of a group of developers building a software solution typically has an even larger impact on DAO design. The collective reasoning process of DAO developers is based largely on their prior experiences with DAO software solutions, which form path dependencies. The impact of such path dependencies became apparent in the Ethereum developer community and their attempts at upgrading Ethereum 1.0 to 2.0 in the late 2010s.

Developers' familiarity and comfort with suboptimal layer 1 solutions creates long-term path dependencies for DAOs. Most developers expect certain solutions and libraries to exist in a layer 1 network in order to facilitate accelerated development and client service. Building on established but suboptimal solutions allows developers to show progress in systems design. Yet, working with suboptimal layer 1 blockchain solutions with high gas fees and low throughput delay the evolution of DAO infrastructure design as innovation and evolution is inhibited through suboptimal layer 1 features. Upgrading layer 1 solutions in third and fourth generation blockchains becomes more difficult if developers bring first generation layer 1 solution, and associated expectations as to how things should work, to 3rd and later generation blockchains that are created in more advanced languages.

Regulatory Uncertainty

Regulatory uncertainty is holding back the development of DAOs and the optimization potential of DAOs for digital assets. For example, the original DAO claimed to be a crowdfunding contract and made unregistered offers and sales of DAO tokens in exchange for Ether.⁷ However, the SEC began an investigation and determined that, although the DAO claimed to be a crowdfunding contract, it did not meet the SEC's requirements for a Regulation Crowdfunding exemption because the DAO is neither a broker-dealer nor a funding portal registered with the SEC and the Financial Industry Regulatory Authority.⁸ In July 2017, following this investigation, the SEC issued an investigative report stating that virtual coins or tokens may be securities and subject to securities laws, depending on the facts and circumstances including the economic realities of the transaction. The SEC stated that federal securities laws apply to those who offer and sell securities in the United States, regardless of whether the issuing entity is a traditional company or a decentralized autonomous organization, regardless of whether securities are purchased using fiat or virtual currency, regardless of whether they are distributed in certificated form or through distributed Ledger technology. Federal securities laws provide disclosure requirements and regulatory scrutiny aimed at investor protection.⁹

Perhaps the most common and the broadest legal issue associated with DAOs pertains to the selection of an applicable jurisdiction. Jurisdictional issues for DAOs include the government's ability to enforce relevant regulations and DAO accountability through civil liability.

⁷ "SEC Issues Investigative Report Concluding DAO Tokens, a Digital Asset, Were Securities." U.S. Securities and Exchange Commission, July 25, 2017. <https://www.sec.gov/news/press-release/2017-131>.

⁸ Ibid.

⁹ Ibid.

If the DAO is not properly legally formed, DAO participants can be held personally liable for the DAO's liabilities. Historically, DAOs did not incorporate or officially create a corresponding legal entity off-chain for their on-chain existence. The lack of legal recognition of DAOs creates uncertainty as to how they would be treated by a court should they be sued. That is, the average DAO participants might not expect to be held liable for liabilities or obligations of the DAO. However, a very serious risk is associated with DAO membership in the sense that if the DAO members do not formalize a structure for their human-created entity, courts are very likely to impose one for the members of the DAO.¹⁰

It is possible for a DAO to be legally construed as a general partnership or joint venture.¹¹ Under U.S. law, DAOs are most likely to be treated as partnerships. A partnership is "an association of two or more persons to carry on as co-owners a business for profit."¹² Such basic action legally forms a partnership, regardless as to whether or not the persons intend to form a partnership.¹³ If no legal entity is involved, partnership rules are default rules that apply to all interactions between parties trying to achieve a common goal.¹⁴ No U.S. statute authorizes the creation of a legally distinct entity in the form of a DAO.¹⁵ Many courts and lawyers would describe the relationship between members of a DAO and their investors as the default general partnership which holds every stakeholder of a DAO liable for any debts or legal actions that the DAO may face.¹⁶ Even not-for-profit DAOs can run into legal gray areas where participants may individually face legal liability for the activity of the organization if a court were to consider them partners should a litigation ensue.¹⁷ The original DAO was arguably a partnership—a public, permission-less community-based, with on-chain governance, and a very specific investment purpose.¹⁸ By

¹⁰ Stephen Palley, "How to Sue a DAO," LinkedIn (Mar. 14, 2016), <https://www.linkedin.com/pulse/how-sue-dao-stephen-palley>; see also Carla L. Reyes, "If Rockefeller Were a Coder," *George Washington Law Review* 87 (Mar. 2019): 398-400.

¹¹ See Laila Metjahic, "Deconstructing the DAO: the Need for Legal Recognition and the Application of Securities Laws to Decentralized Organizations," *Cardozo Law Review* 39 (2018): 1554.

¹² U.P.A. §102 (11) (amended 2013).

¹³ *Ibid.* at §202(a)

¹⁴ MME Switzerland Token Summit, "Beyond DAOs and Foundations: The Decentralized Autonomous Association (DAA Model)," May 28, 2020, video, 6:00-6:30, <https://youtu.be/tGLiSg5OLzE>

¹⁵ Amual, Shawn S., Josias N. Dewey, and Jeffrey R. Seul. *The Blockchain: a Guide for Legal and Business Professionals*. Eagan, MN: Thomson Reuters, 2016.

¹⁶ OpenLaw, "The Era of Legally Compliant DAOs," Medium (Jun. 26, 2019), <https://medium.com/@OpenLawOfficial/the-era-of-legally-compliant-daos-491edf88fed0>.

¹⁷ The LAO, "The LAO: A For-Profit, Limited Liability Autonomous Organization," Medium (Sep. 3, 2019), <https://medium.com/openlawofficial/the-lao-a-for-profit-limited-liability-autonomous-organization-9eae89c9669c>.

¹⁸ MME Switzerland Token Summit, "Beyond DAOs and Foundations," 4:10-5:30. For full discussion of The DAO as a general partnership, see Metjahic, s"Deconstructing the DAO: the Need for Legal Recognition and the Application of Securities Laws to Decentralized Organizations," 1546.

interacting with a smart contract, DAO members unite their efforts and resources to achieve a certain goal, which satisfies the legal definition of a simple partnership.¹⁹

As partners, DAO participants are potentially liable jointly and severally for all debts, obligations, and other liabilities of the partnership.²⁰ That could mean that any known participants in the DAO may be targets for regulatory enforcement or civil actions.²¹ However, some believe that the way in which people come together to fund, participate, and interact with a DAO is significantly different than that in a general partnership, and therefore such characterization is not appropriate.²² By contrast, a limited liability company is the only party that is liable for debts, obligations, or other liabilities of the company.²³ A member or manager is not personally liable, directly or indirectly, by way of contribution or otherwise, for a debt, obligation or other liability of the company solely by reason of being or acting as a member or manager.²⁴ In order to form an LLC, a certificate of organization is filed with the Secrlegal wrapperry of State.²⁵ As will be discussed below, the DAO of DAOs's legal structure is not subject to these shortcomings and creates optimized solutions for DAO infrastructure.

The application of the legal concept of fiduciary duties is less clear in DAOs. Fiduciary duties may require a fund manager to act in the best interests of their client.²⁶ In the traditional regulatory infrastructure fiduciary duties often function to overcome the corporate governance problems associated with the separation of ownership and control²⁷. However, in a DAO, because of the value-to-effort focus of workflows in the DAO structure, supervision and imposition of legal duties are less clearly applicable. DAO token holders optimize the DAO together according to their individualized value propositions in accordance with their unique skillsets, backgrounds, and training.

¹⁹ MME Switzerland Token Summit, *supra* note 14, at 5:30-6:00. See, e.g., George Samman & David Freuden, "DAO: A Decentralized Governance Layer for The Internet of Value," Medium (Sep. 19, 2020).

²⁰ U.P.A., *supra* §306 (a).

²¹ Usman W. Chohan, "The Decentralized Autonomous Organization and Governance Issues," (Discussion Paper, University of New South Wales, Canberra, 2017).

²² For full discussion of business organizations and DAOs, see Amuial, et al., *supra*; see also Alexandra Sims, "Blockchain and Decentralised Autonomous Organisations (DAOs): The Evolution of Companies?," *New Zealand Universities Law Review* (forthcoming 2019) on capitalization structures and DAOs, see Reyes, "If Rockefeller Were a Coder," 414-18, 419-22 (discusses DAO as business trust).

²³ U.L.L.C.A. § 304(a) (Unif. Law Comm'n 1997).

²⁴ *Ibid.*

²⁵ *Ibid.* at § 201 (a). For more on limited liability protection and blockchain, see De Filippi, Primavera, and Aaron Wright. *Blockchain and the Law: the Rule of Code*. Cambridge, MA: Harvard University Press, 2019.

²⁶ Patrick Eha and Tanaya Macheel, "What the Attack on the DAO Means for Banks," *American Banker* (Jun. 20, 2016) (quoting Kirill Gourov, Expand Research analyst and "early bitcoin adopter").

²⁷ Wulf A. Kaal "Blockchain Solutions for Agency Problems in Corporate Governance," *Economic Information to Facilitate Decision Making*, ed. Kashi Balachandran (Singapore: World Scientific Publishers, 2019), 23.

Another legal risk associated with DAOs pertains to the legal recourse for third parties who contract with a DAO. In lieu of partner liability, it is less clear who a liable party may be in a DAO. Without clearly defined liability rules, third parties and investors in DAOs may have less clearly defined legal recourse.²⁸ While DAO dispute settlement is relatively predictable on-chain,²⁹ settlement off-chain is less predictable.³⁰ Parties may be able to limit remedies to DAO assets through private agreements. But, if the DAO should face a tort suit, such an agreement is unlikely to be upheld.³¹

Cybernetic systems are constantly changing and less amenable to jurisdictional reach, making it near impossible to apply a common legal anchor and traditional jurisdictional principles to cybernetic systems. For example, Ethereum was launched as a foundation³² in order to have sufficient funds to further promote³³ and propose the genesis block to the community.³⁴ After it launched, the community had to decide which version of the protocol they desired to adopt and use.³⁵ Such community choices make the application of jurisdictional principles and a legal anchor governance structure³⁶ less clear for cybernetic systems. Exacerbating things, cybernetic systems often involve counterparties that do not concurrently exist.³⁷ Therefore, web interfaces add centralization elements which make a legal anchor more critical because that is what traditional lawyers look for to analyze the system and apply jurisdictional principles.³⁸ For example, with The DAO, the financial markets authority in Switzerland did not look at the functionality of the smart contract but how the DAO was sold, promoted, and displayed.³⁹

²⁸ Eha and Macheel, "What the Attack on the DAO Means for Banks" quoting Kirill Gourov; see also Chohan, "The Decentralized Autonomous Organization and Governance Issues," 4.

²⁹ Peter Van Valkenburgh, "What Does It Mean to Issue a Token "On Top Of" Ethereum?," CoinCenter (May 10, 2017), <https://www.coincenter.org/education/crypto-regulation-faq/what-does-it-mean-to-issue-a-token-on-top-of-ethereum/>.

³⁰ Ibid.

³¹ Ross Campbell, "E-Commerce with Legal and Blockchain Security," Medium: Good Audience (Jan. 26, 2019), <https://blog.goodaudience.com/e-commerce-with-legal-and-blockchain-security-6f2ba6c244a3>

³² MME Switzerland Token Summit, *supra* note 14 at 37:51-37:51. See, e.g. "About the Ethereum Foundation," Ethereum Foundation, last updated June 22, 2020, [https://ethereum.org/en/foundation/#:~:text=The Ethereum Foundation \(EF\) is,supporting Ethereum and related technologies.&text=Their role is not to,of a much larger ecosystem](https://ethereum.org/en/foundation/#:~:text=The Ethereum Foundation (EF) is,supporting Ethereum and related technologies.&text=Their role is not to,of a much larger ecosystem).

³³ MME Switzerland Token Summit, "Beyond DAOs and Foundations," 40:21-40:34. See Ethereum Foundation, "About the Ethereum Foundation."

³⁴ MME Switzerland Token Summit, "Beyond DAOs and Foundations," 37:51-40:12. See Ethereum Foundation, "About the Ethereum Foundation."

³⁵ MME Switzerland Token Summit, "Beyond DAOs and Foundations," 40:12-40:21.

³⁶ Ibid, 40:34-40.

³⁷ Ibid, 42:40-43:00

³⁸ Ibid, 43:00-43:30.

³⁹ Ibid, 43:30-43:49

The application of securities laws is less clear for DAOs. Traditional organizations are subject to risk and compliance controls around fund withdrawal.⁴⁰ Under current laws, DAOs solely governed by smart contracts are restricted in their ability to pool assets and generate profit because securities laws limit their ability to fund ecosystem development and deploy capital efficiently.⁴¹ The SEC found that The DAO's tokens were securities, meaning that they were required to register with the SEC and be subject to federal securities regulations.⁴² A security ("investment contract") is defined as "an investment of money in a common enterprise with a reasonable expectation of profits to be derived from the entrepreneurial or managerial efforts of others."⁴³ This is a very fact-specific analysis, which requires thorough investigation or discovery in litigation to even determine whether a given token meets the definition of a security.⁴⁴ Certain ICOs have since been classified as securities offerings, but in addition to federal securities laws, state law may treat the issuance of tokens differently.⁴⁵ In essence, for participants in a DAO, all of these factors combined lead to uncertainty, and potential liability for failing to comply with federal securities regulations, which are designed to protect investors.⁴⁶

Suboptimal Incentive Design

The lack of decentralized governance solutions affects the application of decentralized systems on multiple levels. Decentralized networks depend on dynamic governance. As blockchains protocols evolve in a given market, they require updates. At the beginning of the 2020s, basic standards for the governance of digital assets were still missing. Efforts to provide more legal certainty through regulatory carve-outs were mostly tentative and lacked sufficient regulatory support or voting majorities in the regulatory agencies. The evolution of the digital asset market necessitates certainty for market participants. Without standards and governance, certainty and the associated market confidence cannot develop.

⁴⁰ Eha & Macheel, *supra* note 26 (quoting Kirill Gourov)

⁴¹ The LAO, "The LAO: A For-Profit, Limited Liability Autonomous Organization."

⁴² "SEC Issues Investigative Report Concluding DAO Tokens, a Digital Asset, Were Securities." U.S. Securities and Exchange Commission.

⁴³ SEC v. W.J. Howey Co., 328 U.S. 293, 301 (1946).

⁴⁴ Timothy Nielsen, "Cryptocorporations: A Proposal for Legitimizing Decentralizing Autonomous Organizations," *Utah Law Review* (forthcoming 2019-20): 8-9.

⁴⁵ Sven Riva, "Decentralized Autonomous Organizations (DAOs) as Subjects of Law – the Recognition of DAOs in the Swiss Legal Order," (Master's Thesis, University of Neuchatel 2019)..

⁴⁶ See also Joel S. Telpner & Thomas M. Ahmadifar, "ICOs, The DAO, and the Investment Company Act of 1940," *Investment Lawyer* 24 (2017): 16; Amual, "The blockchain: a guide for legal and business professionals," § 4.5.

Chain forks with all their negative effects were still a reality and common practice for blockchain protocol upgrades in the early 2020s. While sometimes forks were merely used to test a process or upgrade, forking was most often used to implement new characteristics for digital assets or to create a fundamental protocol change. The bifurcation of nodes in a given decentralized network can lead to significant economic loss, errors, confusion, and bugs. For example, the bifurcation of network nodes can result in the reemergence of the double spend problem that the previous network had overcome. Users running the pre-fork code consider the post-fork code invalid, they cannot detect the spending on the post-fork code. Correspondingly, cryptocurrencies spent in a post-fork block could be spent again on a pre-fork block. Similarly, fork-related changes in protocol parameters such as the block size or the difficulty of the cryptographic puzzle can result in certain blocks being accepted by the post-fork protocol but rejected by the pre-fork versions of the protocol which may result in the loss of funds. The economic loss associated with such parallel existence can be quite significant. Finally, the fork that created Bitcoin Cash illustrates the risk of contention and the associated social and political turmoil post fork that necessitates blockchain reorganization. Post Bitcoin Cash fork, the Bitcoin community could not agree on the chain that provided the most survivable protocol. As a result of contention, two blockchains, i.e., Bitcoin and Bitcoin Cash, compete in perpetuity with the resulting social and economic loss for each chain.

DAO governance lacked proper incentive designs at the beginning of the 2020s. Most DAOs utilized centralized forms of master nodes to institute blockchain protocol and DAO upgrades. Human nature and any effective machine derivatives of human engagements in institutional form require a duality of incentives in order to overcome attempts of rational and opportunistic internal and external constituents to game the governance design of a given DAO. The duality of incentives consists of a) incentives for actors to improve their own utility, while at the same time b) actors' actions benefit the entirety of the institution and its constituents for the long run.

DAO designs at the beginning of the 2020s did not effectively master this duality. Moreover, then-existing DAO designs did not effectively use non-fungible assets and weighted keys as an accounting metric for reputation to overcome corruptive elements. When fungible assets are used as the dominant incentive design in the governance of DAOs with identifiable actors, rational and opportunistic internal constituents and external participants will typically attempt to corrupt the governance design of the DAO for their own gain. Similarly, the identity of actors in a DAO governance design creates typically corruptive elements. Merit identifiers other than individual identity remove the most corruptive influences. At the beginning of the 2020s, no then-existing DAO design had

effectively conceptualized and applied an anonymous merit identifier with non-fungible decentralized assets.

Governance & Legal Design Experimentation

In the 2020s, DAO legal designs are still largely relegated to experimentation. Such experimentation is natural and useful for the evolution of DAO concepts. Trial and failure of legal DAO designs create a natural filtering mechanism for successful DAO designs. Importantly, the experimentation with DAO legal designs, that is, legal designs that allow DAOs to interact with the real world in a legal construct, can go hand in hand with internal DAO governance designs.

Any experimentation with DAO legal solutions has the ultimate objective of accomplishing the highest level of decentralization. Lasting legal solutions for DAOs have to increase and maintain the internal and external decentralization accomplished in the DAO. DAOs cannot exist and persist without ever increasing degrees of decentralization. Therefore, first and foremost, DAO legal designs need to supplement the internal decentralization accomplished by the DAO.

Perhaps the most serious challenge for DAO legal designs is supplementing internal DAO decentralization. Existing legal solutions for DAOs typically require forms of legal representation in the respective jurisdiction, which are always a point of centralization. This is because tying the legal existence of a DAO to any forms of existing legal and jurisdictional frameworks typically results in the need for a representative in the chosen legal framework and jurisdiction, which in turn centralizes the DAO and can result in the long-term failure of the respective DAO concept. However, representation requirements are a natural DAO-anchoring mechanism for a given jurisdiction in order to allow the respective jurisdiction to exercise jurisdiction and control over the DAO.

Surrendering jurisdiction over DAOs while giving DAOs legal status and limited liability will be the epitome and linchpin for DAO legal solutions. Surrendering control over DAOs while giving them a legal status in the given jurisdiction may be accomplished someday, if and when jurisdictions recognize the importance of DAO constructs for business relationships. However, it is perhaps less likely to tie the legal status recognition to forms of limited liability while surrendering jurisdiction over the DAO. Giving a DAO legal recognition and limited liability in a given jurisdiction would require the legislature to acknowledge that third parties in that jurisdiction who may interact with the limited liability DAO would only have limited recourse if things go wrong in the legal relationship. Because consumer protection is a core mandate for any legislature, it seems less likely

that they will surrender control and jurisdiction over the DAO which includes no legal recourse, inability to sue in national courts etc, while also giving the DAO limited liability in that jurisdiction. Even if adequate alternative dispute resolution systems should emerge for DAO and smart contracting disputes, it remains unclear if these can suffice from a consumer protection perspective in most jurisdictions.

Combining internal DAO governance with a legal concept has several advantages. First, a DAO with a legal wrapper (e.g. a real-world legal entity that interacts with existing entities on behalf of the DAO) enables the DAO's operations in the real world and beyond. A DAO needs a legal wrapper representing the DAO in the sense that a DAO cannot rent an office or sign a contract that can only happen on paper.⁴⁷ Second, the legal entity that represents the DAO in the real world can benefit from the DAO's on-chain governance⁴⁸ which gives the legal entity a form of decentralized democratic legitimacy while at the same time not requiring internal democratic processes within such legal entity. The legal anchor, i.e., the legal wrapper, creates a form of needed centralization between decentralized technical functionality, legal relevance, and legal definition. Organizing based on functional technicalities runs participants into legal risks.⁴⁹ For example, a smart contract can have a basic element of an organization and hence could be qualified as a minimum simple partnership, and never be a legal entity as such.⁵⁰ In this context, the legal anchor reduces risks and increases legal certainty for the DAO and third parties that transact with the DAO because the DAO would be represented through the legal wrapper.⁵¹ Using the legal wrapper concept, the individual DAO members would not be liable and the third party knows exactly with whom she is interacting and where liabilities arise.

Incremental improvements of DAO governance can include multiple measures. Those measures can include releasing smart contracts in stages. In earlier stages the contract is more controlled and easily updated by a set of cryptographic, multi-signature notaries.⁵² In later stages, the control over the contract is released at an increasing rate. Certification processes and review processes as well as multiple security audits from respected institutions in combination with formal verification programs for smart contracts are additional possible governance improvement solutions for DAOs.⁵³ Design changes can include so-called tripwires - arbitration and mediation under adverse conditions, or

⁴⁷ MME Switzerland Token Summit, "Beyond DAOs and Foundations," 25:10-25:46.

⁴⁸ Ibid.

⁴⁹ Ibid, 16:15-16:30.

⁵⁰ Ibid at 53:01-53:24.

⁵¹ Ibid at 16:30-16:55.

⁵² Kyle Torpey, "They Might Be Smart, But These Contracts Need to Be More Secure," *American Banker* Vol. 181 Iss. 140 Jul. 22, 2016 (discussing RSK Labs).

⁵³ Ibid.

designing the DAO such that it can be stopped when it may appear to become too big to fail. Barriers to DAO entry can help ensure the success of on-chain governance, such as with permissioned blockchains or community guidelines (different tiers for different contracts).⁵⁴

Most cryptocurrencies would not exist if Bitcoin and Ethereum had effective incentives for future protocol development and governance built into the core protocol.⁵⁵ Common core denominators of existing problems in governance design include the corruptive effects of existing governance designs with fungible assets as well as the identity of actors in governance designs. These factors, among many others, contributed to the resulting inability to govern institutions effectively.

DAO governance structures are built on software, code and smart contracts that run on public decentralized blockchain platforms, such as Ethereum. DAOs typically do not have a physical address as they merely compute code. Because of these code-based features, DAOs are not organizations with a traditional hierarchy as known from traditional corporate structures where authority and empowerment flow downwards from investors/shareholders through a board of directors to management and eventually staff. Indeed, DAOs typically do not have directors, managers, or employees. Because a series of smart contracts grants DAO token holders voting rights, the blockchain-based smart contracts imitates the role of articles of association or bylaws and the entirety of a precedent system that would otherwise be provided by default in a jurisdiction-based legal structure. Because DAO code is typically open source, the token holders not only vote on investment and/or work proposals, but also on any change made to the code. Accepted proposals would also be backed by a software code, defining the relationship (in terms of rights, obligations, and performance metrics) between the respective DAO and the accepted and funded work proposals.

The technological infrastructure of decentralized systems enables unprecedented decentralized governance incentive designs that can create solutions that could not so far be accomplished in centralized governance structures. Unlike centralized governance incentive design, decentralized incentive alignment in a DAO has the potential to be organized in an incorruptible way with non-fungible digital assets. Efficiently designed DAO governance helps overcome collective action problems associated with lacking incentive alignment in existing agency-based governance designs.

⁵⁴ Ibid.

⁵⁵ Ravikant, Naval. "Most Coins Wouldn't Exist If Bitcoin and Ethereum Had Incentives for Future Development Built into the Core Protocol." Twitter, April 13, 2018. <https://twitter.com/naval/status/985018594252742656>.

Community audits are a key element in DAO governance. Centralized systems rarely provide for and administer community-driven audits. Community-driven audits go against the agency and monitoring principles embedded in the centralized governance. External monitoring and validation are key in centralized governance systems because the incentive design in centralized structures does not enable incorruptible internal controls. By contrast, community audits are at the core of DAO governance. The decentralized nature of DAOs enhances efficiency of coordination because the users of the system, i.e., DAO members, typically know best how to assess other users / DAO members. The decentralized DAO structure enables unprecedented information symmetry in the governance design because governance information, i.e., DAO group decision-making metrics and DAO governance protocol needs, is at the edge of the decentralized system and is exchanged and evaluated directly between DAO members in a continuous and iterative stream of information that provides dynamic feedback effects.

Governance upgrades in DAOs enable a different kind of agency relationship. Because of the smart contract coordination of agency relationships, traditional control mechanisms employed by principals in agency relationships can be scaled back and partially be removed. DAO workers are engaged in a dynamic set of working relationships that continuously and dynamically self-organize around projects and outcomes, not corporate hierarchies with implicit hierarchical biases.

The DAO governance optimization makes traditional uses of fiduciary duties less relevant. The traditional regulatory infrastructure that attempts to overcome the corporate governance problems associated with the separation of ownership (shareholders) and control (management) relies heavily on fiduciary duties. Those directors and officers who violate their fiduciary obligations in centralized organizations by not acting in the best interest of the corporation can be sued. In the DAO structure such duties and litigation-based control mechanisms are less relevant. Because of the value to effort focus of workflows in the DAO structure, supervision of management and imposition of legal duties on management is less needed because there are fewer or no supervisors. Rather, token holders optimize the DAO together according to their best value propositions in accordance with their unique skillsets, backgrounds, and training.

DAO of DAOs

The common denominator of the aforementioned shortcomings in the existing DAO infrastructure is governance. Governance is not a bug or an afterthought in system design. Governance is the key feature. The future of DAOs hinges on their ability to create

lasting dynamic governance systems that allow their members to coordinate in a decentralized way and equitably redistribute resources in the DAO.

Dynamic decentralized governance is the key element to ensure the longevity of DAOs. Decentralized governance allows DAOs to maintain the fluidity and decentralized order that was possible in the initial stages of the DAO. Without continual efforts to maintain decentralized order, values that initially unite DAO members have a tendency to result in ever tighter and complex hierarchical structures in the DAO. In the final stage, the harmony and cooperation of the decentralized organization filters the group into an ever tighter and complex hierarchical structure, raising some individuals into positions of power over others. Eventually, a tree structure emerges, a fully centralized organization. This filtering process towards centralization is often the result of competition, calculated allocation of power, or otherwise matching the position to the appropriate individual's talents within the DAO. If the hierarchy is successfully completed, all individuals find their positions of power statically fixed and the levers of power clear. This end stage is a completely centralized organization, with the top of the hierarchy being the center of power.

Concept

DAO of DAOs internal governance design and its external legal design supplement each other on many levels and create synergies. For many attempts to create legal solutions, if the internal voting mechanism of a DAO is more centralized and afflicted with existing legacy voting issues, a higher degree of decentralization in the external legal design will typically be canceled out in the long run. If the degrees of internal and external governance decentralization cancel each other out, the respective DAO is less likely to succeed in its decentralization attempt, which in turn makes it more likely for the DAO to fail. By contrast, a DAO of DAO's synergy between internal DAO governance and external legal DAO designs can accomplish higher levels of decentralization. Because the internal governance of a DAO of DAOs is decentralized and effective through reputation staking, it is more likely to create internal governance solutions that translates well into real-world legal solutions.

Legal Structure

Key for the legal solution offered by DAO of DAOs is the hitherto unprecedented duality of internal and external governance design that helps optimize the decentralized nature of the DAO of DAOs. The internal and external governance coordination is facilitated by the unique duality of entities and their respective governance. For the internal governance, the DAO of DAOs uses a system of reputation token staking that facilitates unprecedented incentivization of the DAO of DAOs community and governance

improvements in orders of magnitude. For the external legal relationships and governance, the DAO of DAOs is represented in real-world legal contexts by a legal wrapper.

The objective of the legal wrapper is to establish a decentralized and democratic association with flat hierarchies. Key for the success of the unique duality of internal and external governance of the DAO of DAOs is the broad deference the LEGAL WRAPPER gives to the voting outcomes that originate in the DAO of DAOs. This deference is accomplished through delegation of voting power and outcomes from the DAO of DAOs to a member of the LEGAL WRAPPER.

The DAO of DAOs enables higher levels of decentralization. Because the internal governance of the DAO of DAOs is decentralized and effective through reputation staking, it can create internal governance solutions that translate well into real-world legal solutions that are instantiated via the LEGAL WRAPPER and vice versa. Because the internal reputation staking voting mechanism of the DAO of DAOs is more decentralized it creates decentralization synergies with the external legal design in the LEGAL WRAPPER. Unlike other DAO legal proposals, the degrees of internal and external governance decentralization in the DAO of DAOs and the LEGAL WRAPPER do not cancel each other out but rather synergize and enhance each other.

Governance

Decentralized DAO governance is a core necessity for the evolution of decentralized infrastructure. Most cryptocurrencies would not exist if Bitcoin and Ethereum had effective incentives for future protocol development and governance built into the core protocol. Common core denominators of existing problems in DAO governance design include the corruptive effects of existing governance designs with fungible assets as well as the identity of actors in governance designs. These factors, among many others, contributed to the resulting inability to govern DAOs effectively.

Community audits are a central feature in DAO governance. As discussed above, centralized systems rarely provide for and administer community-driven audits because they go against the agency and monitoring principles embedded in the centralized governance. External monitoring and validation are key in centralized governance systems because the incentive design in centralized structures does not enable incorruptible internal controls. By contrast, community audits are at the core of DAO governance. The decentralized nature of DAOs enhances efficiency of coordination

because the users of the system, i.e., DAO members, typically know best how to assess other users / DAO members. The decentralized DAO structure enables unprecedented information symmetry in the governance design because governance information, i.e., DAO group decision-making metrics and DAO governance protocol needs, is at the edge of the decentralized system and is exchanged and evaluated directly between DAO members in a continuous and iterative stream of information that provides dynamic feedback effects.

Dynamic elements in DAO governance help avoid otherwise inevitable corruptive influences. In any open and democratic system, naturally opportunistic rational parties will attempt to circumvent and game the sets of applicable complex static rules to increase their share of power and profit within the system. Stable and presumptively optimal static and/or constitutional rules for DAO governance therefore typically enable gaming and arbitrage opportunities. To enable sufficient protection of DAO members while at the same time allowing for DAO enhancements, the static sets of rules of smart contracts in such a system will need to be rather complex. With static complex sets of DAO rules comes inevitable corruptive opportunistic gaming and arbitrage behavior. To avoid these negative effects of static complex DAO rules, effective DAO governance designs should be focused on dynamic elements. Dynamic elements here include DAO members' ability to re-evaluate existing precedent in the system.

In the early 2020s, on-chain voting mechanisms were still largely in their infancy. Most on-chain voting mechanisms and governance designs mostly resembled a plutocracy. Suboptimal voting outcomes in existing decentralized protocols were associated with the then-popular one-token-one-vote voting mechanisms. A one-token-one-vote design allocates more power to token holders who have a significant share of the total supply of a given token. Majority token holders have more power than the rest of the token holders combined. These structures reintroduce many of the downsides and suboptimal incentive allocations of one-share-one vote designs in legacy systems of the early 21st century. Examples of the suboptimal outcomes of a one-token-one-vote system include the two party system in the United States.

More mature voting alternatives are slowly emerging. Such alternative DAO voting designs can ameliorate the traditional voting power corruption of one-token-one-vote. Alternative voting methods include quadratic voting, futarchy, liquid democracy, conviction voting, and reputation-based voting as an instantiation of non-fungible voting. These emerging more mature voting ecosystems enable on-chain protocol governance with an incentive design that more optimally balances risk and rewards of voting.

On-chain governance models can further be optimized with reputation-based staking as voting mechanisms. Reputation-based voting revolves around voting by way of staking a non-fungible asset, aka staking non-fungible reputation tokens in a given DAO, towards a certain outcome. The corruptive elements of fungible assets/tokens are removed because third parties are less likely able to take over a non-fungible asset, such as reputation, that is organically grown and maintained through actual expertise in a given DAO subject matter. Even if third parties should be able to take over or purchase non-fungible reputation, they are less likely to be able to maintain the reputation score and the associated revenue stream of fungible assets over time.

In the 2020s, legal designs of DAOs are still largely relegated to experimentation, which is useful for DAO concepts to create a natural filtering mechanism for successful DAO designs. The experimentation with legal designs that allow DAOs to interact with the real world in a legal construct can go hand in hand with internal DAO governance designs.

Lasting legal solutions for DAOs have to increase and maintain the internal decentralization accomplished in the DAO, with the ultimate objective of accomplishing the highest level of decentralization. Without decentralization, DAOs cannot persist. DAO legal designs need to supplement the decentralization accomplished by the DAO - perhaps the most serious challenge for legal designs.

Reputation-Based Internal Governance

The use of reputation staking and voting metrics in the DAO of DAO's internal governance design has key advantages over other decentralized voting mechanisms. The DAO of DAOs's use of reputation voting has two key advantages over other decentralized one-token-one-vote voting mechanisms:

- 1) it is non-fungible which avoids corruptive elements, and
- 2) it optimally aligns incentives for DAO of DAOs members individually and at the same time aligns their incentives for the totality of the DAO of DAOs as an institution.

Because reputation is non-fungible, and ideally anonymous, it is much harder for DAO of DAOs members and external participants to try to game the system to improve their own utility exclusively while hurting the common good of the DAO of DAOs.

The DAO of DAO's non-fungible and fungible token governance design enables the incentivization of DAO of DAOs members with indirect economic gain. In the DAO of DAO's bifurcated design with two disparate types of tokens, i.e., reputation tokens and

reputation salary tokens, 1. the non-fungible reputation tokens give DAO of DAOs members voting rights, and 2. fungible reputation salary tokens allow DAO of DAOs members to earn a fungible salary in proportion to their non-fungible reputation tokens. DAO of DAOs members increase their non-fungible tokens by making valuable contributions to the DAO and participating consistently in DAO of DAOs voting pools. DAO of DAOs members get paid with a fungible algorithmic stable token that is pegged to a pool of fungible tokens/good/consumer price index. The salary payments in fungible stable tokens are in proportion to DAO of DAOs members' respective non-fungible reputation token scores. The indirect economic effects remove corruptive elements and make the governance design more attack-resistant and stable in the long run.

Reputation as a valuation metric allows DAO of DAOs members to improve their own utility while at the same time improving the DAO of DAOs in the long term. Because reputation is used as a metric for indirect economic benefits, i.e., a salary in fungible tokens that is paid in proportion of the non-fungible reputation token score, DAO of DAOs reputation token holders are incentivized to increase their own reputation/utility by engaging in valuable conduct for the DAO. The more the aggregated individual reputation of all DAO of DAOs members increases, the more the overall DAO of DAOs value increases, and the more the DAO of DAOs creates value enhancing outcomes for its members.

Reputation-staking as a basis for the DAO of DAOs governance improves incentive alignment and enables the correlation between individual and institutional value enhancement. DAO of DAOs members rationally stake their own reputation tokens based on the outcomes they believe will increase their overall reputation/utility. If they did not they would irrationally sacrifice a future income stream in fungible tokens. Through reputation-staking, the DAO of DAOs members are incentivized to provide long-term positive contributions because the DAO of DAOs member reputation is transparent and reviewable by the DAO of DAOs and the public in a slow, stable, yet dynamic review process that reaches far into the future. Valuable individual behavior/work that leads to individualized reputation staking and individual reputation enhancement also enhances the DAO of DAOs as an institution because the individual and institutional value enhancement are correlated.

The correlation between individual DAO of DAOs value enhancement and DAO of DAOs institutional value enhancement can be illustrated as follows. Take, for example, a DAO of DAOs member who stakes that a given smart contract template is optimal for XYZ outcome/application. Once the template is affirmed by the DAO of DAOs members as optimal at that point in time, it becomes a valuable precedent for the DAO of DAOs

members and external DAOs. Hence, the staking of an individual and the ex-ante work that leads to staking increases sustainable value for all DAO of DAOs members. The DAO of DAOs members and other DAOs will rationally increasingly use the precedent until a better precedent emerges. That precedent thus increases the individual DAO member's reputation and the DAO overall.

The reputation-based governance design in the DAO of DAOs changes the dynamic of a zero-sum game to a positive-sum game. Prior DAO governance designs were mostly zero-sum games as they used mostly fungible rewards and incentive designs. Accordingly, in prior DAO designs, DAO members pursued as large of a portion of the rewards as possible for themselves. By contrast, the reputation-based DAO of DAOs governance design creates a positive-sum game because DAO of DAOs members have incentives to create lasting non-fungible value for the DAO of DAOs by developing a long-term non-fungible record of productive cooperation that in effect improves the DAO of DAOs. Moreover, individual DAO of DAOs member reputation can change dynamically if the DAO of DAOs member's actions depreciate in value. The DAO of DAOs member reputation is inflationary in the DAO of DAOs design. As such, non-use, i.e., non-staking of reputation tokens or non-voting, would lead to value depreciation, which incentivizes action and thus value enhancement. Liveness faults become less likely. Its ability to address liveness faults in its incentive design is a key distinguishing feature of the DAO of DAOs.

The DAO of DAOs's decentralized on-chain precedent system enables dynamic and evolutionary reputation-based governance. Most prior attempts at DAO governance design had no dynamic and evolutionary elements. By contrast, the DAO of DAOs's decentralized on-chain precedent system enables feedback effects between DAO of DAOs members, the public record of work/posts on the blockchain, and the public users. The DAO of DAOs's decentralized precedent system makes the continuous upgrading of real-time data possible. As a post/template on the blockchain gets increasingly referenced by the DAO of DAOs members and other users, it increases the respective DAO of DAOs member's non-fungible reputation weight and associated fungible token salary. Conversely, if a DAO of DAOs member's post/template on the blockchain dissipates over time, a new post/template emerges naturally. If the new post/template gets more often referenced by the DAO of DAOs members and other users, it becomes over time the new prevailing precedent. The old precedent dissipates over time with non-use. This precedent replacement mechanism in the DAO of DAOs design is dynamic and evolutionary. It has the promise to create eternal solutions for DAO governance and dynamic evolutionary protocol upgrades.

Game-theoretical Design

To create the proper incentive design in its reputation staking engine, the DAO of DAOs incorporates several game-theoretical insights:

- The DAO of DAOs disincentivizes betrayal and defection by charging an admission fee to become a DAO of DAOs member. Given the sunk cost of joining the DAO of DAOs, it is more expensive for prospective members to cheat because it would be expensive to rejoin even if members could be anonymous. The DAO of DAOs also blacklists member accounts to incentivize cooperation. KYC protocols further expand those incentives to cooperate.

- To ensure continuous cooperation of DAO of DAOs members, the promise of future profits in the DAO of DAOs reputation token outweigh their present value. The DAO of DAOs reputation token has a more stable and predictable value as the LEGAL WRAPPER onboards additional grants and the DAO of DAOs network grows globally. Reputation tokens in the DAO of DAOs system are correlated with expected future salary tokens in the LEGAL WRAPPER.

- In the DAO of DAOs design the loss of opportunity from slashing DAO of DAOs member reputation grows as the size of the network increases. In other words, the larger the DAO of DAOs network, the more competition for reputation tokens to receive fungible token salaries. Further, given the incomplete information due to increasing anonymity, the value of the information from reputation tokens increases. When potential business partners have less knowledge of DAO of DAOs members' identity, the knowledge from the number of reputation tokens a DAO of DAOs member holds becomes more important. Moreover, the lack of personal knowledge encourages the DAO of DAOs members to devote more effort to fairly policing reputation tokens. Meritocracy is encouraged.

Policing and Compliance

The DAO of DAOs reputation-staking design also enhances policing and compliance. The value of DAO of DAOs member reputation is directly related to how well punishment can be distributed in response to cheating. The more transparent the system, the more accurate and efficient policing can be. Members of a traditional business police nefarious conduct by withholding their business. But to make the threat credible, DAO members need to police other members and penalize them if they did business with those who

showed misconduct. To make the threats credible in a traditional business setting one would need to monitor those who, in turn, did not monitor those who, in turn, did not monitor. This is an expensive proposition. By contrast, in the DAO of DAOs, algorithms can be written which exclude DAO of DAOs members who cheat from having access to their market. Punishment for cheating becomes automated and therefore credible. Free riding in policing can at least partially be eliminated by automation. Algorithms can be written proactively to only supply contracts to those who have sufficient reputation. If a DAO of DAOs member's reputation is slashed, such members will not be chosen by the algorithm.

Equal Distribution of Power

The DAO of DAO's reputation-based governance design enables a much more equal distribution of power. Language, religion, race, physical presence, group identifiers, culture, etc., influence centralized power distribution. Similarly, commonly used identifiers in centralized governance such as social media profiles and credit scores, among others, are essential for access to the central system and to resources. Such relatively superficial identifiers play less of a role in the DAO of DAOs voting designs. The more equal distribution of power in the DAO of DAOs governance design allows the inclusion of constituents who otherwise have no agency in centralized systems.

Attack Resistance

The DAO of DAOs design addresses sockpuppet accounts and Sybil attacks. It is reasonable to assume that DAO of DAOs members can join from any jurisdiction and cannot be tracked or punished for any bad behavior by appealing to outside authorities. In that case, the only punishment available is to take away DAO of DAOs members' potential future reputation token salaries in the DAO of DAOs. DAO of DAOs Members are all anonymous and DAO of DAOs members might try to game the system by creating multiple accounts, i.e., sockpuppet accounts. The only way to discourage such malicious actors from joining is to charge money during the member onboarding process.

Weighted Keys Accounting

Weighted keys have key advantages over NFTs as an accounting method for reputation in a DAO of DAOs. NFTs can be used as an accounting system of reputation management in the Ethereum environment and other first generation blockchains. Weighted keys provide an alternative accounting system for DAO of DAOs reputation. Leading 3rd generation blockchains provide weighted keys as an accounting metric as part of their key design specifications. This provides an ideal environment for reputation management and accounting.

A key, yet temporary, comparison of reputation NFTs vs. weighted keys as a reputation management system highlights the potential of weighted keys:

- NFTs hold reputation in a wallet. By comparison, weighted keys are held on-chain.
- NFTs can be transferred from wallet to wallet. By comparison, weights in keys cannot be transferred as easily as they are tied to a particular key.
- Weighted keys are preferable to NFTs because the smart contract itself holds the weights and each smart contract may require a different weight for a given key (this is ideal for different DAO smart contracts which can be accessed with the same key in different DAO environments that require different/unique weights for the same key depending on the DAO smart contract).
- Unlike NFT wallets where the wallet accumulates NFT for scoring, weighted keys can accumulate more weight in the smart contract.
- A smart contract weighted key can give its user full access at weight 1 but may accumulate more weight in the future. As such, the accumulation of weight may be displayed as a reputation score.

Sockpuppet Attacks

In addition to membership fees, sockpuppet attacks are also avoided via the DAO of DAOs's periodic reputation-weighted salary that distributes all fees the DAO of DAOs earns through the LEGAL WRAPPER to all members. Individuals who bring successful ideas to the DAO of DAOs or perform tasks that bring fees to the LEGAL WRAPPER will be rewarded with reputation tokens, not the salary tokens. DAO of DAOs members who own more reputation tokens share in a larger percentage of the salary pool. This solves the sockpuppet attack because if a DAO of DAOs member creates 10 accounts with 1 reputation token each, it is the same as 1 account with 10 reputation tokens.

DoS Attacks

The DAO of DAOs design addresses DoS attacks. Denial of Service (DoS) attacks happen when anonymous adversaries flood a given network with automated requests for superfluous tasks. Such incoming superfluous tasks prevent the network from engaging in productive work. To restrict a significant number of bad actors from entering the DAO

of DAOs system and ensure resistance to basic DoS attacks, the DAO of DAOs charges a nominal fee during the onboarding process. This fee merely needs to be high enough so that the effort to police the bad actors is profitable, but not so high that it prevents people of good will from joining the DAO of DAOs. The precise number for the onboarding fee depends on the market environment.

Level of Decentralization

The level of decentralization in a DAO design is an indicator for longevity of the respective DAO. The level of decentralization and the associated attack resistance and incorruptibility of DAO governance designs are among the core factors that influence DAO design adoption, its precedential value, and longevity. In other words, the more decentralized a given DAO design, the more likely that design will in the long run be adopted by other DAOs. However, not all future DAO designs will comply with the ideal-typical DAO parameters. Ideal typical DAO design parameters will naturally filter out at the edges. In other words, because the optimal DAO design parameters change constantly, if and when formerly ideal-typical designs fail, new and optimized designs will replace them.

The level of decentralization in the DAO of DAOs design may be defined by the following factors:

- merit identifiers, i.e., DAO of DAOs members merit, knowledge, and influence is measured through their respective DAO of DAOs non-fungible reputation token ownership;
- non-fungibility of DAO of DAOs weighted keys, i.e., merit of a DAO of DAOs member is expressed by a non-fungible weighted keys that cannot be bought or sold;
- full transparency, i.e., all DAO of DAOs decisions are fully transparent and accessible by the public and the DAO of DAOs members themselves;
- indirect economic incentives, i.e., DAO of DAOs members are getting paid with stable fungible tokens in proportion to their non-fungible reputation tokens;
- decisions in the DAO of DAOs are made with a voting design that revolves around staking of non-fungible reputation tokens; and

- DAO of DAO's fungible salary tokens are designed as stable and EURO denominated cryptocurrencies that maintain their value at around 1 EURO. The incoming token grants from a diverse set of grantors are part of the pool of digital assets that constitute the basket of digital assets against which the DAO of DAO's stable and EURO denominated cryptocurrency is pegged.

- anonymity of DAO of DAOs members, i.e., after an initial setup and development period with less anonymity, DAO of DAOs merit identifiers revolve around reputation scores and members of the DAO of DAOs community can predominantly be identified by their respective reputation score in the DAO of DAOs structure.

Conclusion

A DAO of DAO enables the experimentation for DAO ecosystems that is needed to bring the DAO evolution and decentralized commerce to its next evolutionary stage. Decentralized governance is the key feature that enables the evolution of a DAO of DAOs. As the decentralized governance becomes more mainstream, other DAO ecosystems can cooperate with the DAO of DAOs. The increasing experimentation with the governance precedent set by the DAO of DAOs facilitates the ecosystem of DAOs to evolve.

