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## **How to DAO: the role of trust and confidence in institutional design**

*By Primavera de Filippi and Tara Merk*

# Abstract

Decentralized Autonomous Organizations (DAOs) have been used to govern a wide variety of applications, ranging from decentralized finance (DeFi), investment clubs and crowdfunding campaigns to more socially oriented initiatives such as decentralized social networks and guilds. Depending on their purpose and intent, different DAOs reflect different needs and desires for trust and confidence. In this chapter, we argue that blockchain practitioners should be wary of adopting a one-size-fits-all approach to DAO governance and design. Instead, different solutions should be adopted to achieve the governance structure that is most desirable for each DAO, according to its own purpose and specificity. We distinguish between three macro-categories of DAOs based on their relationship with trust and confidence, to issue recommendations on institutional design; (1) trust-driven which express a lower need for institutional scaffolding, (2) confidence-driven DAOs that require a more extensive institutional scaffolding, and (3) trust and confidence driven DAOs which require some degree of institutional scaffolding. The paper concludes by underlining the importance of accounting for the relational aspects of a DAO community when designing the institutional structure of a DAO.

# Introduction

Decentralized autonomous organizations (DAOs) have gained significant attention in recent years, as a tool for communities to govern themselves through the use of blockchain technologies. DAOs have been used to govern a wide variety of applications, ranging from decentralized finance (DeFi), investment clubs and crowdfunding campaigns to more socially oriented initiatives such as decentralized social networks and guilds.. More socially oriented DAOs may be interested in building a community with a strong relational fabric grounded in trust, whereas more finance oriented DAOs may opt for a trustless application framework allowing for secure interactions that are mostly driven by confidence rather than trust.

Despite their application range, current implementations of DAOs and their governance structures remain relatively undifferentiated. Within the industry, practitioners draw on standardized libraries (e.g. Open Zeppelin) and DAO frameworks (e.g. Aragon or DAOHaus) to facilitate a fast and easy on-chain setup, and supplement by popular off-chain tooling like governance forums, Discord and SnapshotT. Despite these affordances, DAO governance remains a significant challenge, as any DAOs suffer from a lack of participation, making it hard to achieve necessary quorums to pass proposals, or leaving most of the decision-making power to a small number of core contributors or large token holders. Some DAOs also suffer from a lack of alignment within the community, which can reduce the operational efficiency and effectiveness of these DAOs, as they struggle to reach consensus.

Different mechanisms put in place to remedy a lack of participation and alignment have different consequences on the institutional design and relational fabric of a DAOs. In this chapter, we argue that blockchain practitioners should be wary of adopting a one-size-fits-all approach to DAO governance and design. Instead, different solutions should be adopted to achieve the governance structure that is most desirable for each DAO. Just as the choice of institutional structures between an association and a publicly traded company vary considerably, DAOs need to be technically and operationally structured to fit their purpose and underlying community dynamics. In particular, we explore how different DAOs can (and should) employ different mechanisms to increase the degree of participation and alignment in their community, depending on whether they value trust or confidence more.

We frame our analysis around the emerging field of extitutional theory (De Filippi & Santolini, 2022), operationalizing it in the context of community participation and alignment in DAOs. Extitutional theory provides an integrated framework to analyze the interplay between impersonal institutional structures and more personalized relationships to investigate how these affect social dynamics in organizations. We apply extitutional theory in the DAO context to illustrate, on the one hand, how community participation and alignment might impact the relational fabric of a DAO, and, on the other hand, how different expectations for trust and confidence affect the choice of institutional designs to achieve greater participation and alignment. In order to undertake our analysis, we distinguish between three macro-categories of DAOs (1) trust-driven DAOs, which express a lower need for institutional scaffolding, (2) confidence-driven DAOs that require a more extensive institutional scaffolding, and (3) trust and confidence driven DAOs which require some degree of institutional scaffolding. The paper concludes by underlining the importance of accounting for the relational aspects of a DAO community when designing the institutional structure of a DAO.

## DAO's institutional design and relational fabric

The definition of a DAO is a source of ongoing controversies and debates (for example: Buterin, 2014; Ghavi, et al., 2022; Santana & Albareda, 2022; Hassan & De Filippi, 2021). At their core, DAOs enable structured social dynamics among a distributed network of agents coordinating themselves through the use of blockchain technology. They allow for multiple actors to pursue a common goal through collective action and the shared management of resources. DAOs are composed of two fundamental aspects: relational dynamics between members of the DAOs, and institutional frameworks that structure members' interactions via blockchain technology. The latter are generally codified on-chain, whereas the former occur off-chain. It is important to analyze both the relational dynamics and structuring elements of DAOs in order to make informed recommendations on the most suitable governance structures that best accommodate these two ordering logics in different contexts.

Extitutional theory offers an integrated framework to describe how institutional structures interact with the relational dynamics of an organization, and the interplay that subsists

among them (De Filippi & Santolini, 2022). It distinguishes between the *institutional structure*, understood as a formal and rational set of rules, roles, and procedures that inform the behavior of an organization, and the *extititutional culture*, as a more informal and relational set of norms, values, and practices that shape the behavior of individuals within the organization. The institutional structure provides a framework for decision-making, organizing work, allocating resources, and establishing authority. It is often shaped by external influences such as legal requirements, industry standards, and professional norms. The extititutional culture is simultaneously shaped by, and a driver of the interactions, social relationships, and shared experiences of individuals within the organization. It informs behaviors, socialization processes, and how individuals interpret and respond to the formal institutional structure. A well-designed and transparent institutional structure is a catalyst of confidence in the organization, because it produces clear and predictable outcomes. Conversely, a dense and positive relational fabric is a catalyst of trust within the organization, which is nurtured through repeated interactions, open communication, and the alignment of individual behavior with the interests of the organization. Both are crucial in the formation of organizational behavior and decision-making processes, and both contribute to the long-term sustainability of the organization. We analyze each of these aspects in more detail below, and apply them to the context of DAOs.

Drawing on Weber's (1964) work on bureaucratic organizations, the institutional perspective emphasizes the importance of rules, procedures, and hierarchical structures in shaping organizations, its mechanical processes and impersonal structures. The combination of *roles* and *rules*, taken together, constitute the codified normative structure of an organization. Rules describe how specific processes and tasks within an organization should proceed and roles determine who should execute, oversee and evaluate each task. The institutional design of an organization is typically codified in a particular set of documents to become effective and persist over time and independently of individuals. Thus, institutional structures can be observed by studying companies' bylaws, communities' code of conducts or states' laws and regulations.

The institutional structure of an organization is crucial in creating confidence. Codified rules and roles become more legible to the public, instilling confidence by allowing stakeholders to understand how the organization operates, assess its integrity, and evaluate its performance. Moreover, by establishing clear lines of responsibility and consequences for misconduct, institutions create a sense of accountability. Finally, because institutions have clear and predictable processes, policies, and decision-making frameworks, stakeholders can have a reasonable expectation of how the institution will act in different situations. This establishes a level of confidence, reducing uncertainty and risk for stakeholders.

The example of Moloch DAO illustrates the interplay of institutional structures and extititutional culture in web3. MolochDAO is an Ethereum-based DAO framework. It provides a framework for collective decision-making and resource allocation, allowing participants to pool their resources and collectively decide on project proposals and funding allocations.

The key institutional features of Moloch DAO include:

- *Membership*: Moloch DAO implements a permissioned membership system whereby participants become members of the DAO through a proposal process. They must be vouched by existing members in order to become members themselves.

- *Governance power*: By contributing a predefined amount of cryptocurrency (usually Ether) to the DAO's smart contract, members acquire voting or non-voting shares in the DAO.
- *Proposal Process*: Anyone can propose projects, initiatives, or funding requests to the DAO. Proposals are typically submitted in the form of a smart contract that outlines the details of the proposal, including the requested funding amount and the intended purpose of the funds.
- *Voting and Funding*: Once a proposal is submitted, voting members have a specified period of time to vote on the proposal. Voting is done using the DAO's native cryptocurrency, with voting power proportional to the amount of cryptocurrency each member has contributed. If a proposal receives enough support (often reaching a predefined quorum), it is approved, and the requested funds are allocated to the proposal.
- *Exit Mechanism*: Moloch DAO incorporates an exit mechanism that allows members to exit the DAO and retrieve their contributed funds. This feature ensures that members have the ability to reclaim their assets if they no longer wish to be part of the organization.

From an institutional perspective, there are two types of members: voting members and non-voting members. Voting members are responsible for analyzing the proposals submitted to the DAO and voting on said proposals. Voting is performed according to specific rules, i.e. it must be done in a particular timeframe and it must reach a minimum quorum. Both voting and non-voting members also have the possibility to exit the DAO, retrieving their funds and thereby losing their membership. These roles and rules are codified in the DAO's smart contract, and automatically enforced. Consequently, people interacting with the DAO do not need to trust the members to comply with the rules. They can be confident about it, because the technological framework makes it impossible for members to deviate from the prescribed rules and roles. Blockchain technology can in this sense be regarded as a 'confidence machine' (De Filippi, Mannan, & Reijers, 2020).

However, looking at the institutional structure of a DAO fails to account for the influence of individual members, the personal relationships that subsist among them, as well as the tacit knowledge and integrated habits that they each bring to the table—which are better explained through an extitutional lens.

Extitutional theory stipulates that both the codified rules and roles of an organization, and the more implicit and emergent social dynamics that characterize the relational fabric of that organization need to be taken into account to achieve a comprehensive understanding of the operations and evolution of organizations (De Filippi & Santolini 2022). Accordingly, in the DAO context, merely analyzing the institutional design of a DAO may overlook the intricate relationships and feedback loops that exist between the (on-chain) institutional structure of the DAO and the (off-chain) extitutional dynamics of its community.

Extitutional dynamics appear at the interstices of the institutional rules and roles that have been codified into the institutional design of DAO. The larger these interstices are, the greater is the agency and discretionary powers assigned to the DAO member. This means that, while trust is not required to guarantee rule compliance, a certain degree of trust remains necessary to guarantee that compliance is done in accordance with the values,

principles, and general expectations of the DAO community. When trust is missing, or breached, additional institutional structures need to be put into place in order to ensure the DAO's proper operations.

For example, the functioning of Moloch DAO could significantly change if one DAO participant bribes others, thereby increasing the probability of the DAO approving a proposal stemming from this member, even if otherwise it would have not obtained enough votes to reach the minimum quorum. Such dynamics can only be observed by paying attention to the relational fabric and extititutional dynamics that are being expressed within the DAO community.

One way to address this problem is by the relational fabric and trust relationships that already exist within the DAO community. Trust within an organization is built on the belief that individuals within the organization will act in a trustworthy manner, adhering to the shared norms and values. When individuals perceive a positive and supportive culture that promotes collaboration, respect, and ethical conduct, they can trust that their interactions will be fair, respectful, and aligned with their expectations. Going back to our example, trust within Moloch DAO could be reinforced, by increasing the sense of allegiance toward the DAO and its ethos, thereby reducing the desire of individuals to jeopardize the interests of the DAO or its community. This can be achieved by means of extititutional solutions, such as more frequent social interactions, and community involvement in shaping the DAO's principles and values. If extititutional solutions are insufficient, preventing misconduct might eventually require a change in the institutional rules of the DAO, e.g. increasing the quorum for proposals to be approved by the community or introducing a reputation system within the DAO acting as a deterrent for corrupted individuals.

This example illustrates the interplay that subsists between the institutional layer and the extititutional layer, which constantly affect each other through a recursive feedback loop based on a process of respective assimilation and/or rejection. The institutional framework can react to new extititutional dynamics by either assimilating them, i.e. by introducing an institutional change in order to promote desirable behaviors (e.g. rewarding members' positive contributions) or by sanctioning them, i.e. by introducing new rules designed to prevent undesirable behaviors (e.g. punishing those who exploit their personal power to engage in nepotism or discrimination). Similarly, the extititutional layer can react to the introduction of new rules or roles at the institutional layer by either accepting them, i.e. by modifying the social dynamics to comply with the new normative expectations (e.g. providing favored treatment to people with a higher reputation), or by rejecting them, i.e. by bringing about new social dynamics which are not intended to comply with the new set of constraints, but rather to bypass these constraints (e.g. finding the necessary loopholes that will make it possible to preserve the previous modes of interaction).

Thus, when designing the institutional components of a DAO it is important to pay attention to the underlying relational fabric, to understand the way in which the extititutional components of the organization will react, given a particular institutional design. Indeed, despite the similarity in their institutional design, two organizations with a very different extititutional culture might end up operating in radically different manners in response to the same contingencies.

# The role of participation and alignment in the governance of DAOs

Community participation and alignment are valuable indicators in the analysis of a DAOs extititutional culture. Community participation refers to the active involvement of community members in decision-making processes and activities within the organization. Community alignment refers to the degree of agreement and shared purpose among community members regarding the values, goals, and direction of the organization. Both are necessary to generate a strong extititutional culture with positive trust relationships within an organization. Community participation is a precondition to establish and maintain the relational dynamics necessary for the emergence of extititutional culture in organizations, whereas community alignment ensures the coherence and cohesion of such extititutional culture. A cohesive extititutional culture also increases the likelihood that members participate and feel aligned with the organization, further enhancing their sense of trust, allegiance and commitment. This creates a positive feedback loop, whereby community participation and alignment contributes to fostering the relational fabric of an organization, which in turns motivates more participation and alignment. Accordingly, participation and alignment can serve as an indicator for assessing extititutional culture within a DAO. The degree of participation in a DAO serves as a proxy for the density and strength of the relational fabric that exists within that DAO, whereas alignment serves as a proxy to assess the coherence and cohesion of this relational fabric.

Understanding participation in a DAO requires a preliminary assessment of the number of actors interacting with the DAO and the frequency of such interactions. This requires a clear delineation of who qualifies as a participant/member, and what is the scope of actions that constitute participation. Previous research into online communities have repeatedly found that a small core group is typically responsible for the lion share in participation (Gasparini, Clarisó, Brambilla, & Cabot, 2020). This has been empirically studied in various contexts such as Twitter (Antelmi, Malandrino, & Scarano, 2019) and on digital health social networks (Carron-Arthur, Cunningham, & Griffiths, 2014). Thus, it is important to distinguish between relational dynamics that subsist at the core versus at the periphery of the DAO.

Analyzing participation and its impact along various metrics has long been studied in open source communities. Generally, the higher a community scores on participation metrics—such as the number of interactions, messages sent, time spent online, number of contributions, and so on—the more successful it is likely to be (Malinen, 2015). Various factors have been shown to encourage participation in open source communities. Extititutional factors include promoting a strong sense of belonging (Park et al., 2014) and recognizing the (non-monetary) value of individual contributions (Rashid et al., 2006). More institutional factors include economic incentives or reputation scoreboards, which have been found to have diverging effects on participation depending on the communities. For example, in a study of MoCo Blogs, a Chinese corporate blogging community, Liao et al. (2012) found that monetary rewards only increased user participation on corporate websites; whereas in a study of Reaktor, an open source music software community Cook et al. (2009) demonstrate that reputation and ranking systems can motivate some and demotivate others from participating in the project. Interestingly, these findings suggest that extititutional

mechanisms—such as strengthening cohesion by distilling a strong sense of belonging and making contributions ‘feel’ valuable—only generate positive effects on community participation, without the adverse outcomes which more institutional measures, such as economic incentives and leaderboards, may have.

The second relational property relevant for the analysis of a DAO’s extititutional culture is alignment. Intense participation might be a signal of either a strongly engaged community that is highly aligned and therefore effective in its operations, or a highly misaligned community that is in active conflict. Hence, it is important to account not only for the quantity but also the quality of participation. Previous research has analyzed the quality of relationships within open source communities using various tools such as narrative analysis (e.g. Leyton Escobar, Kommers, & Beldad, 2014), surveys (e.g. Park, Gu, Leung, & Konana, 2014) and digital ethnography (e.g. Duchenaut, 2005). Overall, findings suggest that positive relationships amongst community members increase participation and improve overall cohesion.

In the context of DAOs, alignment subsists where there are shared values, and social norms among the participants. Community alignment begins with a shared vision and mission that reflects the organization’s goals and values. At first, founders and early participants within a DAO coalesce around a common purpose—which constitutes the ‘animating purpose’ of the DAO (Alston 2022). Whether it’s about advancing a specific technology, supporting a cause, or pursuing economic opportunities, the shared vision and mission act as guiding principles for decision-making and action. Furthermore, alignment also encompasses values and norms that shape the behavior and interactions within the DAO. This may include principles such as transparency, inclusivity, and respect. When community members align themselves around these values, it fosters a sense of trust, cooperation, and accountability.

Over time, however, conflict inevitably emerges (Brekke, Beecroft, & Pick, 2021). This may be because the DAO membership grows, incorporating new—and at times divergent—values ported by new members, which may require renegotiating the animating purpose of the DAO in order to better align it with the broader community. Alternatively, conflict may arise when the DAO needs to react to exogenous change, which might also require a revision of the DAO’s original animating purpose.

To accommodate these conflicts, DAOs can adopt extititutional mechanisms that promote open deliberation and consensus-building. This can be done by establishing channels for community members to provide feedback and input on contentious issues, such as: surveys, open forums, or dedicated feedback mechanisms. By actively seeking and incorporating community perspectives, DAOs can increase community engagement, mitigate potential conflicts, and foster a sense of inclusivity and shared ownership.

In addition, DAOs may also choose to implement institutional mechanisms to mitigate disputes ex-ante (for example via codes of conduct) and/or to resolve them ex-post (for example via judicial or alternative dispute resolution systems) (Alston 2022). In the context of this paper, these mechanisms represent institutional solutions intended to remedy problems at the extititutional layer.



# The role of trust and confidence in the institutional design of DAOs

Trust and confidence are pivotal elements in the institutional design of DAOs, in that they shape their operations, effectiveness, and long-term sustainability. The blockchain infrastructure provides a significant degree of confidence in the underpinning of a DAO, by establishing clear and codified rules and procedures for decision-making. However, for DAOs to thrive, trust also needs to be nurtured—both among the DAO community and between the DAO and its participants. Understanding the significance that trust and confidence play within a particular context is crucial for DAOs to understand the proper mix of institutional structure and extitutional culture that must be put into place in order to ensure their success and long-term sustainability. Yet, as discussed above, different DAOs with different animating purposes might require a different combination of trust and confidence. We identify below three macro-categories of DAOs that distinguish themselves based on the varying degree of trust and confidence they require or desire: (1) DAOs that primarily rely on a trusted relational fabric; (2) DAOs that are mainly intended to provide trustless or disintermediated services to the public at large, and (3) DAOs that rely on a trusted community but also intend to provide services to a broader audience.

Given their different objectives, DAOs in each of these categories will adopt different institutional and extitutional strategies to maximize community participation and alignment—some of which are more prone to foster trust over confidence, or vice versa. We illustrate these strategies through three different case studies that help us delineate the variety of institutional or extitutional solutions that are available to DAOs. Our hypothesis is that the stronger the role of trust is in the DAO, the more important it is for the community to focus on building a strong extitutional culture in order to catalyze participation and alignment, with only a minimal extent of institutional scaffolding required to support the community. Conversely, the greater the role that confidence plays in a DAO, and the less room there is for trust, the greater the amount of institutional scaffolding that will be required in order to ensure a sufficient degree of participation and alignment within the community.

## Institution minimization in trust-driven DAOs

The degree to which DAOs require confidence established by encoded roles, rules and processes, significantly depends on what the DAO's purpose is and the values and norms that inform how this purpose should be achieved. In predominantly socially oriented DAOs, a core goal is to foster a collaborative community, enabling people to coalesce around a shared interest or kinship. Here, the main purpose of the institutional structure is to enable individuals to engage with each other, while minimizing the risk of trolling or other behavior that could be harmful to meaningful relationship building. That is, the institutional structure merely provides the necessary scaffolding to facilitate the emergence of positive trust relations.

In fact, in the case of socially oriented DAOs, institutionalizing too many roles, rules and processes could weaken the relational fabric of the DAO community. This is due to the fact that each new role, rule and process contributes to reducing the agency of the persons

affected by these institutional constraints.. For example, by introducing a rule by which people need to seek approval from a manager before engaging in a particular activity might create a heightened degree of confidence that people are behaving according to the rules. . While this dynamic is desirable in many contexts, it can be detrimental to the extititutional fabric of a socially oriented DAO, as people might feel that they are not being regarded as sufficiently trustworthy to behave in line with the community's social norms out of their own behalf. Each new institutionalized mechanism thus reduces the need for trust and therefore also the incentive for people to build trusted relationships, forming shared habits and rituals based on voluntary interactions rather than prescribed instructions.

As such, as opposed to the idea of 'governance minimization' that has become popular in the web3 community (Ehrsam, 2020), the principle of 'institution minimization' is an alternative approach that might be more desirable for socially oriented DAOs. The case of DADA is a good illustration of this principle. DADA is a historic NFT art collective currently undergoing an Exit to Community (E2C) process, by transitioning from having formally been incorporated as a for-profit company to becoming a DAO (DADA.art, 2022; Mannan & Schneider, 2021). DADA is an extreme case of insitution minimization in the web3 ecosystem, as the community has decided against the introduction of voting (with or without tokens), formal community rankings, or any economic mechanisms incentivizing outsiders to join and participate in the DAO.

DADA is a digital platform where people communicate through collective artistic practices. The DADA platform hosts thousands of people responding to each other's drawings, engaging in a commons-based peer production (Benkler & Nissenbaum, 2006) type of visual conversations. Beyond the platform, DADA has built a vibrant community with the mission to radically separate art making from the art market, through the "Invisible Economy" (Ramos & Mam, 2021). At its core, DADA's invisible economy aims to create an environment in which art is solely produced through intrinsic motivation, while nonetheless ensuring that artists are remunerated for their works. The Invisible Economy thus quite literally aims to make economic and status based mechanisms *invisible* for individual artists, and redistributing value collectively generated by the artist community to sustain the practice of intrinsically motivated art creation. DADA's purpose thus appears twofold: firstly, to create and maintain a platform for people to collaboratively create art; and secondly, to implement an Invisible Economy within its community. Ultimately, the DADA platform enables people to collaborate because they *want* to, not because they ought or need to. Consequently, it requires institutional structures that enable and encourage voluntary collaboration.

The DADA platform (which has over 150,000 registered members) constitutes the basic institutionalized structure from which extitutional relationships emerge. Here,he only set of roles and rules structuring interactions o is the "dot" system, whereby different color dots represent a user's journey on the platform, and a minimum amount of dots is required to earn the right to reply to other people's drawings on the platform.<sup>1</sup> The Dot System is a

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<sup>1</sup> The project explains the implementation of the dot system as such: "When we first launched our drawing platform, anyone could reply to any drawing. But sometimes trolls would reply to a beautiful drawing with crude drawings meant to deface it. We implemented a very basic system that requires a minimum of points for people to be able to respond to drawings. Anyone can still participate but now it requires effort to earn the right to respond. In a social network culture based on exponential growth, this kind of friction seems

minimal form of institutionalization that creates just enough confidence to enable relational dynamics to unfold.

The DADA project is driven forward by a core community of 20-30 artists, technologists, collectors and researchers, who are predominantly driven by the vision to realize the Invisible Economy. Adhering to this vision explicitly requires keeping extrinsic incentives and systems that can be gamified out of the community and platform. Indeed, all institutionalized structures that introduce the possibility of gamification and normatively codified rewards (or punishments) have the potential to harm the vision of the Invisible Economy. Consequently, DADA's animating purpose requires institution minimization within the community. As a result, within the core group, there are very few institutionalized roles, rules or processes allowing and encouraging it to work in a highly extitutional manner. For example, meetings are mostly constructive and productive despite never having an agenda or outcome attached to them.

DADA illustrates how for DAOs that value voluntary collaboration, and whose animating purpose mostly consists in enabling relational dynamics to emerge, institution minimization can be a valuable approach. Their institutional scaffolding focusses solely on preventing unconstructive interactions to occur. While DADA achieves this through the implementation of its Dot system, other popular practices include community's code of conducts, referral mechanisms for new members to join the community, or the institution of roles such as community moderators.

Finally, it is important to note that in trust-driven and socially-oriented DAOs such as DADA, scaling the community or expanding the scope of their animating purpose takes relatively long. This is because in order to effectively scale participation and alignment on new or expanded goals, new relationships of trust have to be built, or new values need to be incorporated into the cultural fabric of that organization. Both processes take relatively more time when done via extitutional, rather than institutional means.

## Institution maximization in confidence-driven DAOs

Uniswap is a prominent example of a DAO that primarily focuses on confidence to provide trustless services to the public at large. As a decentralized exchange (DEX) protocol built on the Ethereum blockchain, Uniswap facilitates the exchange of digital assets without relying on intermediaries. Given its emphasis on trustlessness and disintermediation, Uniswap's institutional design places significant emphasis on creating a robust and secure framework that inspires confidence in its operations. In order to incentivize community participation and alignment, it thus mostly leverages confidence-building institutional mechanisms, as opposed to extitutional solutions based on trust.

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counterintuitive but it actually guarantees the quality of the interactions and it builds community. Since we introduced the point system, those who want to deface DADA are instantly discouraged.” (Ramos & Mam, 2020).

Uniswap's institutional design relies heavily on blockchain technology and smart contracts to govern its operations. This is necessary to ensure that transactions and rules are transparent, immutable, and tamper resistant. By leveraging code-based governance, Uniswap reduces its reliance on trusted human interaction.. To instill confidence in the platform's reliability, Uniswap also emphasizes rigorous security measures, including: code audits, bug bounties, and partnerships with reputable auditing firms. By demonstrating a commitment to security and risk mitigation, Uniswap enhances confidence in its operations and attracts participants.

Yet, paradoxically, while building an immutable system that is effectively incapable of change may produce confidence in the short term, in the medium or long term it might increase the fragility of the system, intervention becomes impossible in the face of unanticipated problems. Hence, it also requires a governance system that enables community members to influence the direction of the Uniswap protocol, in a way that cannot easily be captured by powerful actors.

The governance of Uniswap is achieved through its native token (UNI). UNI has no utility within the platform, yet they can be delegated to individual accounts in order to provide them with the capacity to propose, vote, and implement changes to the Uniswap protocol. Votes are weighted by the amount of UNI tokens that the delegate has received. If a majority of votes approve the proposal—provided that a particular quorum has been reached—the proposal is passed into the queue, for final community review before being automatically executed by the underlying blockchain infrastructure.

With the introduction of the UNI governance token, Uniswap enabled the possibility for the protocol to evolve over time, to accommodate technical and economic contingencies. Yet, at inception, Uniswap adopted a “governance minimization” approach (Buterin 2021), which is common in the web3 ecosystem. It involves reducing the reliance on governance mechanisms and human intervention, wherever possible (Ehram, 2020). As a result, Uniswap only allows governance to affect (a) the amount of token distribution and (b) the fees in the decentralized exchange. Here, the goal is to enhance “credible neutrality” (Buterin 2020), i.e. the dependability of a protocol, its ability to remain unbiased and resistant to capture by any particular group. Credible neutrality has become a cornerstone in web3, as it underpins the primary value proposition of many blockchain protocols, i.e. it allows for a variety of stakeholders, including commercial users and developers, to engage with and build on these protocols with confidence that their interests will be safeguarded.

Despite these institutional solutions, at the extitutional level, the governance of Uniswap remains a source of frustration within the community. On the one hand, many Uniswap participants complain that the governance system is too slow, static, and difficult to navigate (Lewis, Lotti, & Pope, 2022). Indeed, even in the small surface area where governance is possible, navigating through it can be arduous and requires significant political lobbying to reach the minimum quorum. On the other hand, while Uniswap has put in place a formalized three-stage procedure for Uniswap governance proposals, only the last step is implemented on-chain. Hence, just like in many other blockchain networks, there remains a wide range of “invisible politics” at work behind the scenes (De Filippi & Loveluck 2016). In particular, in the context of licenses and partnerships, which do not produce any meaningful on-chain event, the lack of a formalized procedure may ultimately backfire, by redirecting the attention

towards a more informal governance system characterized by a significant degree of politicking that mostly occurs off-chain (Lewis, Lotti, & Pope, 2022).

Perhaps unsurprisingly, the limited agency granted to Uniswap participants has hindered establishing an engaged community. While the focus on governance minimization and credible neutrality aims to ensure protocol stability and prevent capture, it can (inadvertently) create challenges in fostering active community participation. Indeed, the heavy institutional components of Uniswap leave little room for the development of a robust extitutional culture within the platform, which is essential to fostering active engagement and alignment towards common goals. As a result, Uniswap has repeatedly encountered difficulties in achieving sufficient voter turnout.<sup>2</sup>

Motivation explains the low participation. In the beginning, many Uniswap participants were extrinsically motivated investors or liquidity providers, mostly interested in accumulating profits from the use of the platform, rather than intrinsically motivated people, eager to engage with the community and the governance of the platform. Uniswap does not provide any incentive for UNI token holders to participate in governance, the token has been used to fund the grants program but with no vesting attached.

To incentivize more participation and better align the interests of stakeholders, Uniswap could implement additional institutional solutions such as governance rewards and bounty systems. These institutional incentives could community participation and alignment without relying on extitutional trust-building mechanisms. Within web3 this particular institutional design is referred to as “crypto-economics”, i.e. the use of economic incentives, game theory and mechanism design to align the interests of participants in blockchain-based systems. According to Buterin (2018), the goal of crypto-economics is “to reduce social trust assumptions by creating systems where we introduce explicit economic incentives for good behavior and economic penalties for bad behavior.”

However, economic incentives also distort natural incentives for participation, leading to a predominance of extrinsically-motivated participants in the system, as opposed to members who participate for purely intrinsic reasons, and who might—arguably—be better positioned to make decisions that are more aligned with the vision and values of Uniswap. As Schneider (2021) has argued that designing a governance system around crypto-economic incentives can severely limit the scope of governance designs that could be put into place, by favoring plutocracy over democracy (p.14), ignoring participants non-economically driven interests (p. 16), and fundamentally discounting externalities that cannot be accounted in a blockchain-based system (p. 17).

To address this issue, Uniswap and similar DAOs may need to find a balance between purely on-chain institutional design and the cultivation of an extitutional culture off-chain. While the emphasis on governance minimization and credible neutrality is crucial, efforts should also be made to foster community-building, collaboration, and meaningful interactions among participants, both on-chain and off-chain. Striking the right balance can facilitate a more vibrant and inclusive community, fostering a stronger collective identity and alignment towards the goals of the platform.

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<sup>2</sup> <https://cointelegraph.com/news/uniswap-s-first-governance-vote-fails-despite-98-support>

Overall, DAOs whose primary purpose is to maintain the continuous operations of large scale protocols, where technical robustness, security and reliability of the service provided by the protocol is of paramount importance to the success of the overall project, strong institutional design mechanisms in the form of economic incentives and a limited scope for governance are useful to strengthen confidence in the project, both within and outside the community. Nevertheless, to ensure the DAO's ability to adapt to changing outside conditions, even in highly confidence-oriented DAOs, the need for trust-based governance mechanisms remains present. In the following section, we turn to discussing the need for rightsizing institutional design to strike a balance between trust and confidence building mechanisms.

## Institution rightsizing in trust and confidence driven DAOs

While predominantly confidence-driven DAOs and predominantly trust-driven DAOs constitute particular edge cases, most DAOs are likely to fall somewhere in between. Often DAOs value and rely on trust for governance and operations within their communities, but also pursue goals beyond building a community per se. In these cases, DAOs must find the right combination of institutional structures and extititutional culture.

The case of Proof of Humanity (PoH) illustrates various considerations and trade-offs to be taken into account, when dealing with the difficult task of institution rightsizing. PoH is a proof of personhood protocol which allows anyone to register a decentralized digital identity (DID) upon provision of a "proof of humanity". To be effective, the protocol needs to ensure that each registered profile is both singular and unique; i.e. each human can only register exactly one profile and no profile should refer to more than one human (Siddarth, Ivliev, Siri, & Berman, 2020). PoH relies on a technically encoded institutional process, dictating how and under which conditions new profiles can be added to the registry. The institutional design includes the use of Kleros Humanity Courts, a decentralized dispute resolution mechanism developed by Kleros, responsible for verifying that the registry contains only singular and unique identities.

The PoH registry was launched in early 2021. Announced as "a building block for the internet of the future" (Ragosa, 2021), it was intended to serve as the basis for alternative governance mechanisms, as a single sign-on solution, or a means to facilitate reputation and certification systems. To incentivize new people to join the registry and demonstrate a first use case, PoH was launched alongside a Universal Basic Income (UBI) system, periodically issuing cryptocurrency to all registered users (Ragosa, Siri, Ast, & Lesaege, 2021). The PoH protocol is thus highly reliant on confidence-enabling mechanisms to protect the system sybil attacks while scaling the registry's user base.

Shortly after the launch of the PoH registry, the project's governance was handed over to the PoH DAO (James, 2021), governed on a 1-human-1-vote basis and thus heralded as the first 'truly democratic DAO'. In a short time, the community of registered users grew to more

than 18,000 profiles. The PoH DAO was launched accompanied by a Forum on which users can submit, discuss and amend proposals which are then voted on using the off-chain voting tool Snapshot. Apart from basic tooling, no other governance mechanisms were institutionalized at launch. This confronted the DAO with the need to accommodate and align the various goals of a rapidly growing community, while relying on limited institutional structures to adopt and enforce decisions. After more than a year of ongoing discussions, debate and, at times, open conflict to agree on the project's animating purpose, the community decided to fork both the registry and the DAO (Andrei, 2022). Misalignment can be observed throughout the DAO's lifecycles.

PoH was jointly conceived of by Kleros (a cooperative registered in France who have long been involved in building various blockchain enabled dispute resolution and governance technologies) and the Democracy Earth Foundation (a non-profit focused on digital democracy thought leadership and with an avid following in the Latin American context). From the outset, the two organizations elaborated two distinct visions for PoH, which were mirrored throughout the community as it grew. Gradually, members of the PoH community began to perceive two distinct factions developing, indicating that two extititutional cultures emerged. The factions were distinguished based on the organizations they represented (e.g. "Kleros vs. UBI/Democracy Earth"), their differences in goals and values (e.g. "Security and Sybil-Resistance vs. Inclusion and UBI,") or their demographic characteristics (e.g. "English Speakers vs. Spanish Speakers,") (Merk, Cossar, & Kamalova, 2023).

Over time, an important controversy emerged around the use of Kleros Humanity Courts in the PoH registration process. Some members perceived the incentives set by Kleros Courts as problematic, by making it profitable for people to challenge proposals based on minor technical errors (such as uploading the video in the wrong format or small mistakes in displayed the wallet address), rather than based on real malicious intent. Governance proposals to make the video policy more lenient on both accounts were put forth and adopted by the PoH community (Ludovico, 2021; Juanu, 2022). Despite these institutional adaptations, skepticism towards the Kleros court system prevailed among some, while Kleros argued that economic incentives were necessary to protect the registry against sybil attacks. Here, the institutional rules were perceived to be simultaneously conducive and destructive to the DAO's animating purpose: for some, they were necessary to maintain the project's goal of sybil resistance, for others, they were hampering the DAO's ethos of being inclusive. While these different objectives are by no means mutually exclusive, the community failed to find common ground and articulate a shared vision or overarching goals of the project.

In cases where strongly diverging values, norms and preferences exist, institution rightsizing becomes important to facilitate negotiation for the finding of a shared agreement. Ultimately, institutions need to be structured in a way that create confidence that the relational fabric of a DAO will hold up to its standards. This may be achieved through jointly authored constitutions or mission statements bringing in external mediators or establishing safe spaces for joint deliberation. Indeed, when navigated effectively, dissensus can lead to organizational transformation, adaptation and growth (Brekke, Beecroft, & Pick, 2021). However, finding the right institutional mechanisms to facilitate the emergence of a strong extititutional alignment is not easy—especially as even the best intentioned mechanisms can lead to unintended consequences at the extititutional layer, diminishing trust rather than

facilitating it. For example, in the case of PoH, deliberation was mostly done on Telegram. Yet, Telegram is an implicitly feudal system (Schneider, 2021), which necessarily introduces hierarchies in the form of group administrators and moderators. How to hold moderators accountable became a highly disputed topic within the PoH community. After several attempts to establish commonly agreed-upon codes of conduct for community moderators, part of the community resorted to establishing competing Telegram chats creating a novel dispute regarding which Telegram chats constituted the 'official' deliberation channel for the PoH DAO (Merk, Cossar, & Kamalova, 2023). Consequently, by introducing and requiring trusted authority, the institutional design encoded in the structure of Telegram itself, failed to establish confidence in the platform as a place to reconcile differences via extitutional deliberation, contributing to the decision to fork.

Forks are what Brekke, Beecroft, & Pick (2021) call the "dissensus protocol" par excellence, which is triggered when communities are unable to reconcile differences. In DAOs, forking resolves disagreement in a non-coercive, open institutional manner: by copying, modifying and re-deploying open source code (Brekke, Beecroft, & Pick, 2021). Within PoH, given the divergent values and opinions of community members, it became necessary to make the differences in the extitutional culture of the respective factions more explicit and codify them into two separate constitutions, specifying the two sets of values and animating purposes for PoH. The forking proposal stipulates that, in order for the fork to become effective, both constitutions must have received more acceptance votes than rejections (Lesaege, Siri, & Andrei, 2022). This in itself constitutes an exercise of institutional rightsizing: by making the technical fork dependent on articulating and codifying a constitution on both sides, the institutional structure necessitates and facilitates extitutional processes. Vice versa, codifying values and goals of each side facilitates the technical execution of the fork.

Overall, the case of PoH illustrates the difficulty and continuous nature of institutional rightsizing, especially in situations where both trust and confidence are necessary to establish fundamental alignment around a shared set of values and an animating purpose.

## Concluding Remarks

The dynamics of trust and confidence play a crucial role in shaping the institutional design of DAOs and their ability to promote community participation and alignment. Despite the narrative promoted by the web3 space around the concept of "trustless" systems, governance cannot be entirely eliminated and always requires elements of both trust and confidence. Yet, depending on their functions and animating purposes, different DAOs might favor one over the other.

On the one hand, trust-driven DAOs like DADA, characterized by a strong reliance extitutional arrangements, may not require extensive institutional scaffolding. Instead, their focus lies in fostering a strong extitutional fabric that nurtures participation and alignment. Only minimal institutional rules are sufficient to support and enhance the extitutional dynamics of these DAOs.

On the other hand, as illustrated through the case of Uniswap, confidence driven DAOs, are more likely to focus on institutional mechanisms to minimize the need for trust-based



governance. If some degree of governance remains nonetheless necessary - as it usually does - these DAOs may rely on crypto-economic incentives to attract the necessary human involvement required to maintain the system. Thus, while institutional mechanisms are important for these DAOs, they must also take into account the nurturing of an extititutional culture to ensure the effective functioning of the system.

The case of PoH DAO illustrated the difficulty to achieve a proper mix of institutional and extititutional mechanisms, especially in rapidly growing, highly diverse communities. In PoH institutional structures did not instill the confidence required for the community to build alignment, and instead inadvertently caused an increasing amount of mistrust. It is important to note that, in cases where neither institutional nor extititutional mechanisms succeed in facilitating the governance of a DAO the possibility of forking remains.

Consequently, when designing the governance of DAOs, be they primarily trust-driven or confidence-driven, it is essential to strike the right balance and create a proper mix of institutional and extititutional arrangements. Rather than assuming that institutional rules can overcome the need for extititutional dynamics, a more holistic approach is required. This approach, which we have dubbed “institution rightsizing”, focuses on building institutional scaffolding that instills confidence in the effectiveness and legitimacy of the more trust-oriented extititutional solutions.

Finally, it is crucial to recognize that participation and alignment cannot be solely instigated through institutional mechanisms. Merely establishing formal rules and procedures may not be sufficient to cultivate genuine engagement and commitment from community members. Participation and alignment are deeply rooted in the extititutional culture of an organization and rely on social dynamics that extend beyond the realm of institutional governance structures. Accordingly, attempting to incentivize these behaviors through economic incentives or sanctions may distort the underlying motivations for participation and alignment, leading to unintended consequences and potentially undesirable outcomes. To overcome these problems, DAOs must recognize the importance of the extititutional fabric of their communities, which encompasses informal interactions, relationships and shared values that exist among community members. It is within this realm that trust is built, collaboration flourishes, and a sense of belonging is nurtured. Only by paying attention to these extititutional aspects can DAOs create an environment that encourages genuine participation and alignment.

In essence, the effective functioning of a DAO requires a delicate interplay between institutional and extititutional elements, between confidence and trust. While institutional mechanisms provide a framework and structure for formal governance, they should be complemented by a strong extititutional culture. This integration allows for a holistic approach that considers the diverse motivations, needs, and social dynamics of the DAO community, ultimately fostering a thriving ecosystem of participation, trust, and effective decision-making within DAO communities.

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