Overview of DAOs

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Things to keep in mind

- Nothing here is financial advice
  - Do your own research before making a financial decision
- We only analyze how DAOs operate from a governance and legal perspective
  - The technical aspects, security, and safe use of DAOs are beyond the scope of this presentation
- This is a surface level overview of DAOs
  - Generalizations in certain aspects of DAOs have been made and may not reflect the nuances of this space

What are DAOs?

- Stands for Decentralized Autonomous Organization
- A form of governance where decision making is done via voting from the community
- An alternative to traditional hierarchical decision making structures
- Similar to how democracy compares to aristocracy

Types of DAOs we cover:

- Investment
- Protocol
- Government
- Social

How the voting system works

- Proposals to be voted on are published on a rolling basis either by a management team or the members involved in the organization
- Members vote to either pass or deny the proposal
- Each DAO has a governance token members purchase to be eligible to vote
  - In certain DAOs, members are required to stake the token
- Typically voting power is determined by how many tokens a member has
  - Some DAOs also factor in a member's contribution to community, activity and longevity

Basic Technical Requirement for DAOs

Needs to be Turing Complete - It could be used to solve any computation problem.

Ethereum meets the Turing Complete threshold by allowing executable code that takes form as Smart Contracts.

Layers of DAOs

1. **Infrastructure/Blockchain Level**
    a. Execution of protocol by nodes and consensus
    b. Evolvement governance (changes in code)
2. **Application Level**
    a. Application Types
        i. Direct Transactional
        ii. Conditional transaction, single smart contract
        iii. Conditional transaction, multi smart contract
        iv. DAO
3. **Company/Individual Level**
    a. Ecosystem of application programs that enforce company rules
4. **Institutional Level**
    a. Large scale regulation, laws and standards
    b. E.g. Government

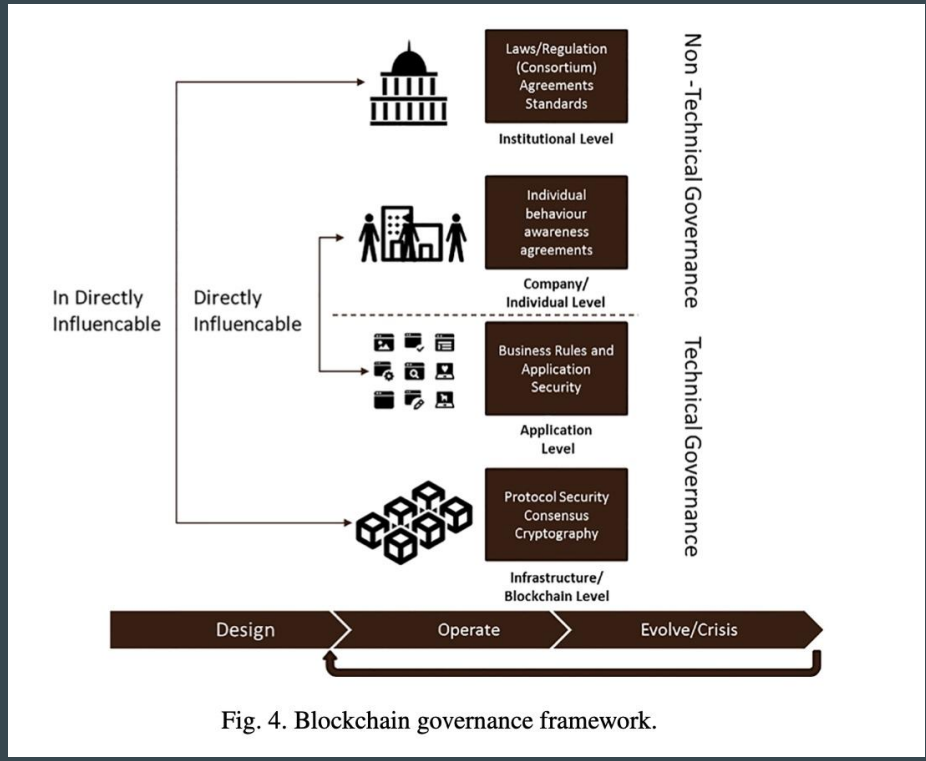


Fig. 4. Blockchain governance framework.

Challenges at Each Layer

1. **Infrastructure/Blockchain Level**
    a. Changing the user of node bases via consensus. Open to attacks or lack of change through inactivity.
    b. Herd majority voting and power imbalances
    c. Lack of research into evolve/crisis mechanisms
2. **Application Level**
    a. Code cannot be altered once deployed on most permissionless blockchains
    b. Long smart contracts increase risk of attack
    c. “the DAO” incident with “proposal 59” where the hacker voted in favor of an update proposal that contained flaws that he would later exploit (Slacknation, 2016)
3. **Company/Individual Level**
    a. Companies can become obsolete if not maintained correctly
4. **Institutional Level**
    a. Deriving jurisdiction is hard since decentralized.

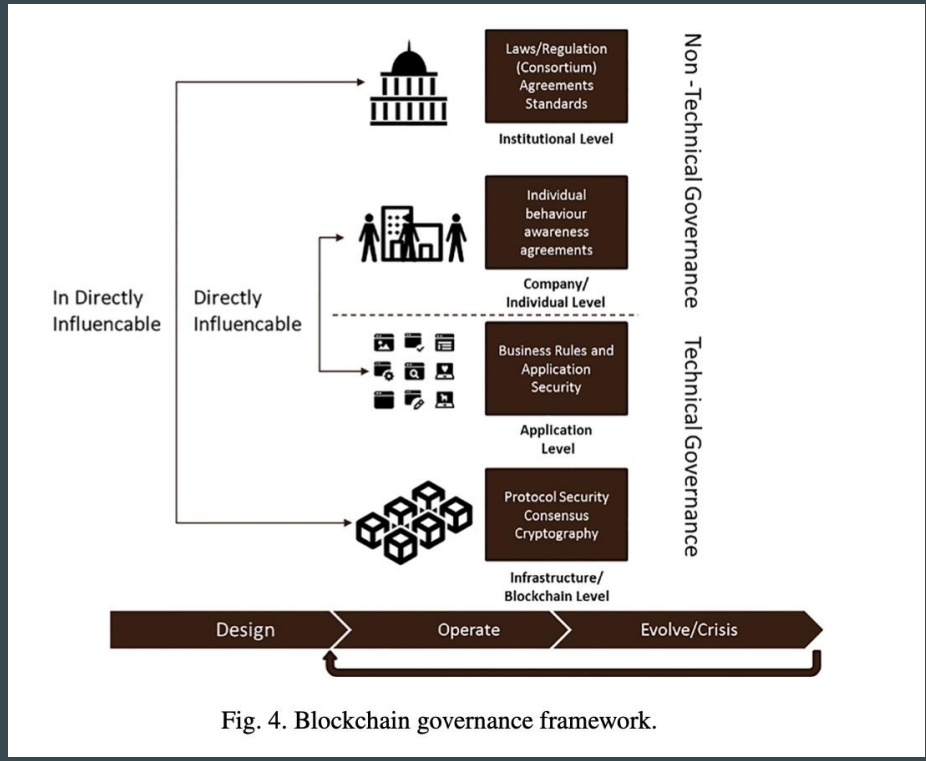


Fig. 4. Blockchain governance framework.

DAO Lifecycle

1. **Design**
   - Non-time critical
   - Co-operation of individuals / group
2. **Operation**
   - Time constraint restricted to rules
   - Executed by nodes through consensus mechanisms
3. **Evolvement/Crisis**
   - Update Process
   - Time criticality depends on update type - Crisis means high time pressure
     i. Example: The DAO Incident which was resolved a month later with a hard fork
   - Through hard / soft fork software updates to infrastructure or applications

Governance Issues

1. **Procedural Tedium**
   - Only functions with heavy voter activity.
   - There is a cost-benefit trade-off for members, thus members need to be incentivized to participate.
   - Example: *BitShares* exchange has been faced with a lack of voter participation, or an absence of voter engagement, because of the labor required to consider each proposal
2. **Legal indeterminacy**
   - Considered illegal by SEC currently which impede development.
3. **Structural rigidity**
   - Code of DAO is difficult to alter after system becomes operational.
   - Bugs that are not fixed leave DAO vulnerable.
   - Code changes require consensus.
4. **Voter manipulation**
   - Voters can be manipulated by a malicious party to allow a coup or takeover.
   - Off chain governance see these challenges including U.S. Gov being controlled by corporations or Russian government being controlled by oligarchs.
   - Example: *Build Finance DAO*, which underwent a coup after a single individual amassed sufficient token concentration to get a vote passed, and then vote to ascribe themselves total power over the DAO, and then used this power to siphon all of the money in the DAO

History and Legal Status of DAOs

History

- Started mid-2010s
- June 2016 “The DAO” - Launched with $150M
    - “The DAO incident” - Hacked and drained of $50M A month later, it was fixed with a hard fork with intervention of the Ethereum Foundation.

Legal Status

- Varies based on jurisdiction
    - SEC in 2017 found them to be illegal offer of unregistered securities.
    - 2021 Wyoming recognized DAOs as legal entities, where CryptoFed DAO was first business from this ruling.
- Often considered a “general partnership”

Investment DAOs (Venture capital, Collectible, Grants)

A DAO where high net-worth individuals and entities pool capital for the purpose of investing in projects, startups or collectibles, usually in the web 3 space

Members enter a DAO by contributing capital to the pool, by which they receive a proportionate share of the governance tokens

- Bigger contribution = more governance tokens = more voting power

When a member finds a potential investment opportunity, member creates a proposal with the appropriate terms ($ amt, valuation, etc.) for the community to vote on

For proposal to pass, 50+% of votes need to approve proposal

- Does not require 50+% of tokens or members, only 50+% of the governance tokens that voted

In the event of disagreements, members can “rage quit”, exiting the fund altogether

Venture Capital DAO

VC DAOs, like traditional VCs, invest in startups in return for equity

Unlike VCs, they don't have general partners (managers) and limited partners (passive investors)

Instead they have members who act as both investors and managers, and service providers who act as administrators and negotiators

Example - The LAO, which manages $50M spread across 162 investments and counting

Venture Capital DAO Pros and Cons

Pros:

Allows investors to be hands on with their money instead of being an LP

Can have the security of investing as a group instead of being an Angel Investor

Voting and due diligence is much faster than angel groups

Join a community/brand of high networth individuals

More deal flow collected as a community rather than as individuals

Cons:

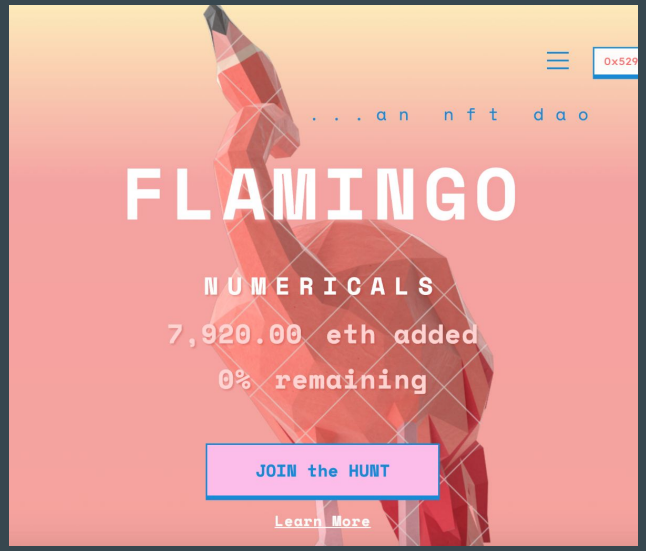
Time and effort required to vote on proposals and generate deal flow

Control of your money is spread out among community

Minimal due diligence or accessibility to portfolio companies

High probability for strategic/creative differences

Collectible DAO



Collectible DAOs invest in collectibles instead of startups (mostly NFTs)

Similar to VC DAOs, these DAOs have members that pool their money to vote on which collectibles to buy and sell

Then administrators execute the passed proposals by buying/selling the specified collectibles

Example - Flamingo DAO, manages 45 NFTs worth an estimated $1Billion

Collectible DAO Pros and Cons

Pros:

Opportunities to own fractions of a collectible instead of the entire thing

- Reduced risk
- Increased portfolio size

Join a community/brand of high networth individuals

Increased exposure to “alpha”

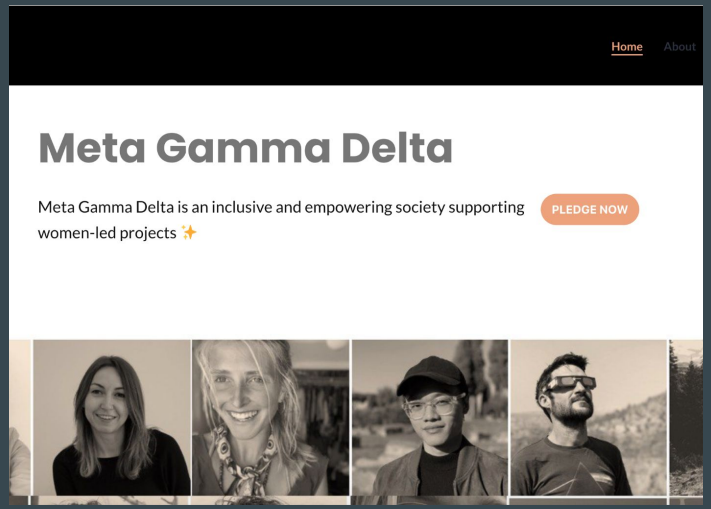
More capital power and brand identity to impact market trends

Cons:

Control of your money is spread out among community

High probability for strategic/creative differences

Grant DAO



Grant DAOs give grants to ventures that promote a certain social cause

Much like other investment DAOs, they also have members and administrators

However, many of these DAOs also have community building events to promote their social causes

Example - Meta Gamma Delta gives grants to women-led ventures, while also fostering a community where they can thrive

Grant DAO Pros and Cons

Pros:

Easy to track and control how your money is being spent as opposed to traditional grant platforms

Join a community of individuals who care about the same social cause

Increased exposure to ventures in specified space

Cons:

High probability for strategic/creative differences

Investment DAO Legality

VC and Collectible DAOs:

- Under the Howey test, the governance tokens of these DAOs seem to be securities
- However, there does seem to be an exception
  - If registered as an LLC, a DAO with <100 members can be considered a private entity
- New legislation might create more flexibility for DAOs
  - Wyoming is the first state to formally recognize DAOs as a legal entity

Grant DAOs:

- Appear to be legal under the Howey test as members are not purchasing tokens with the expectation of profit

Investment DAOs Conclusion

Investment DAOs are not for everyone, but may be for you if you...

- Are looking for a community to invest with
- Want to invest a small amount of money into many projects
- Want to increase your exposure to a particular space (become an insider)

- Are willing to commit time and effort to being a productive member
- Are ok with losing some money due to others' judgement or a lack of information
- Can amicably handle disagreements

Investment DAOs Conclusion Cont.

A few things to be weary of:

- Community is everything
  - A good community is the biggest strength and a bad community is the biggest hindrance
    - They have control of your money
    - You depend on them for “alpha” and networking
  - Make sure your values and strategy align with the community
    - You represent the brand and the brand represents you
- Avoid public investment DAOs
  - Anyone can join, so probably more dumb money than smart money
  - Weak strategic alignment and bigger coordination problems
  - Vulnerable to attacks by conflicting interests (eg. hostile takeover)
  - More likely to be under regulatory fire

Protocol DAOs

Most common and standard use of a DAO

An application specific DAO where the decision making is done by the users and investors

Many of the biggest web3 projects, including most defi dapps, have a native token that users can earn

Users can stake the token for voting shares and vote on proposals such as:

- Strategic partnerships
- Release of new features or bug fixes
- Crisis management

Protocol DAO conclusion

Pros:

- Overall, an effective way to decentralized management and build trust and incentives with the community

Cons:

- However, has the major downside of trusting average users with the direction of the company when they may not do the research or have the qualifications

Government/Institutional DAOs

Government/Institutional DAOs seek to replace the decision functions of governments with robust, logic-based mechanisms that act in place of Congress, election, and evaluation

Government/Institutional DAOs

The problem with Voting

1. **Voters have little incentive to vote at all**. The time spent voting would exceed the value obtained from the vote. Economically rational voters should not vote.
2. Voters would have to spend significant **time and effort analyzing the various candidates and propositions**.
3. Those with power/wealth spread substantial sums on **influencing the voter** are providing systematic misinformation intended to cause the voter to vote against interests
4. **Candidates are likely to behave, in office, in ways that were not anticipated** prior to being elected.
5. Voting is an activity in which all participate equally, even though **not all are equally educated and motivated.**

Government/Institutional DAO Mechanisms

- **Measurement -** Democratic Collective Welfare
- **Evaluation** - Prediction Markets
- **Voting** - Multi-class voter system
- **Incentives** - Collective welfare-based payouts

Measurement - Democratic Collective Welfare

- Voters annually vote using a number between 0 and 1 (inclusive) which reflects their satisfaction with the state of governance.
- This measure is called the Democratic Collective Welfare (DCW)
- The government's role is to maximize this metric through policy and elections, which are evaluated based on their resulting expected future annual DCW.

Evaluation - Prediction Markets

- To evaluate the anticipated value of a particular policy or presidential candidate, prediction markets are used to estimate the future DCW values of each option.
- Prediction markets allow people to create competing algorithms that make DCW predictions, which are trained on historical outcomes. There are reward-based incentives to produce the most accurate algorithms, which in turn produces better evaluations for policy/candidates.
- Since these algorithms require training, they must be planned before the DAO is operational

Voting - Multi-class voter system

- Voter membership can be split into classes based on properties like **Age**.
- This is to make sure all members can have their DCW's measured, while only a sub-class or more qualified members can participate in more impactful voting activities.
- Anyone can propose a new rule or policy, etc. at any time, and it is then evaluated by the prediction market

Incentives - Collective welfare-based payouts

- Rewarding those who increase welfare through various activities allows for the DAO to be resilient and adaptive.
- Any corruption or manipulative actions would be flagged by those in the network, since there are payouts for the finding such activities.
    - Similar to bug bounties for software.

Challenges

- People may decide to join DAOs that are more in their favor, since it is consensus based.
- Since the DAO exists to maximize citizen welfare, a situation can arise where it focuses on pure pleasure. Think the drug Soma in Brave New World, where everyone is constantly happy.

Early Adopters

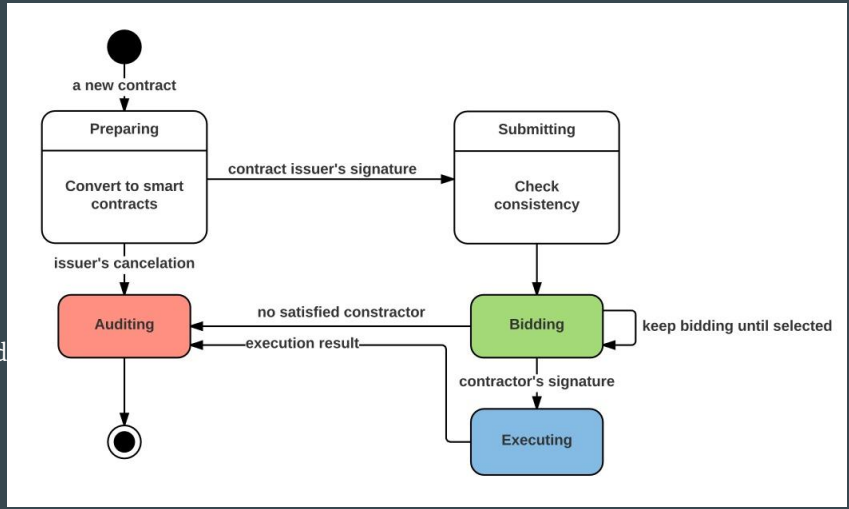
- Young, idealistic: Students, utopians
- The desperate: Bankrupt cities, lawless states.

Infrastructure in Developing Countries

- Cell Phones

Partnership Example: eGov-DAO - Membership for Government Services and Contractors

- Uses a permission Blockchain to control who can participate in the block construction.
- DAO function
    - Comprises of all data and processes needed to complete a task/process such as Government project.
    - Can enforce partnerships
- E-government system or eGov DAO
    - **Maintainer** - Those who manage the blockchain
    - **User** - Government agencies who manage projects, project auditors, and venders/contractors
- Users are registered with digital certificates based on meeting some qualification
- Venders can compete for contracts or negotiate prices using smart contracts. Contracts need to meet project requirements, with milestones.
- Bids are private at the time of bid then made publicly known after the bidding process has occurred.



Social Daos

The essence of Social DAOs is their tendency to elevate community over other functionality. The design and operation of these DAOs facilitate an ecosystem of interaction between members.

Social DAOs are foundationally digital but can also promote connections IRL

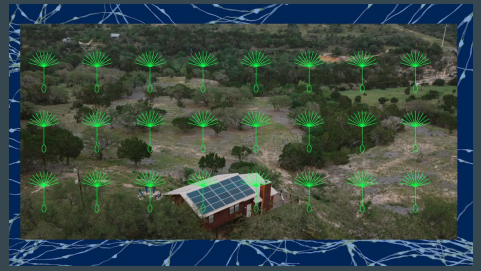
FWB (Friends With Benefits)

A social club that requires purchase of $FWB to gain membership along with a selective screening process with an estimated 20% acceptance rate.

“FWB is a group of cultural creators and maintainers using Web3 to build community and foster creative agency”

Primarily functions within a FWB discord. IRL events are also organized to connect members in real life.

Cabin DAO



1.) Decentralized cities
2.) Creator economy
3.) Physical cabins

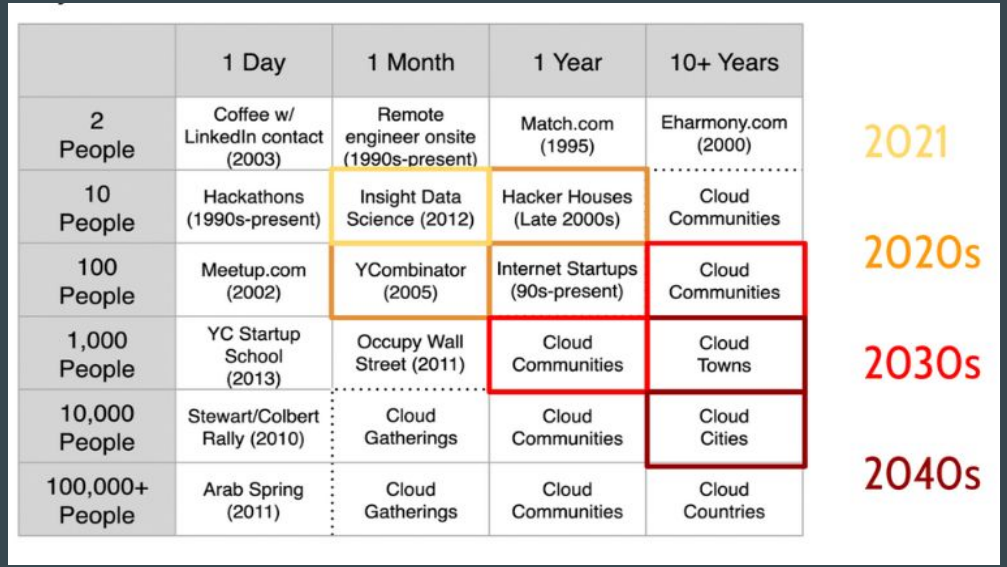
Members of Cabin DAO aspire to create decentralized cities which will be defined using governance tokens. Although there are governance tokens, there is a “leader” that buys physical land in the real world. The DAO also promotes an internal economy that gives income by making money digitally.

“a network of distinct physical locations tied together by shared governance and culture”

- Cabin DAO cofounder, Jon Hillis, on decentralized cities

Cabin DAO

Graphic from the Cabin DAO website representing the formation of community and organization in relation to size and time. Members of Cabin DAO are committed to bringing about cloud towns and cloud communities in the future.



	1 Day	1 Month	1 Year	10+ Years	
2 People	Coffee w/ LinkedIn contact (2003)	Remote engineer onsite (1990s-present)	Match.com (1995)	Eharmony.com (2000)	2021
10 People	Hackathons (1990s-present)	Insight Data Science (2012)	Hacker Houses (Late 2000s)	Cloud Communities	2020s
100 People	Meetup.com (2002)	YCombinator (2005)	Internet Startups (90s-present)	Cloud Communities	
1,000 People	YC Startup School (2013)	Occupy Wall Street (2011)	Cloud Communities	Cloud Towns	2030s
10,000 People	Stewart/Colbert Rally (2010)	Cloud Gatherings	Cloud Communities	Cloud Cities	
100,000+ People	Arab Spring (2011)	Cloud Gatherings	Cloud Communities	Cloud Countries	2040s

Social DAOs Pros and Cons

Pros:

- Meet new people with similar interests or be exposed to new backgrounds
- Gain a sense of inclusion within a niche community
- Potential future applications with artificial reality technology

Cons:

- Creates a pay to participate narrative
- Sometimes not clear why they must be built on blockchain technology
- Can exacerbate inequality when the purpose of DAOs is democratization
- Many social DAOs are difficult to scale

Social DAO Conclusion

There are many creative social daos that abstracts the idea of community and society (e.g. Cabin Dao, decentralized cities). Many of these DAOs cleverly integrates the functionalities of crypto tokens to establish nuances in the dynamics of the DAO's internal operations. Although many of these ideas are promising, there are just as many and/or more "Social" Daos that do not perform any unique functionality that require structuring as a DAO. Furthermore, whether paying for these exclusive memberships is worth it can be hard to be discern from the outside (many of these DAOs are just access to inactive discord channels).

Overall Conclusion

- We believe there is a place for DAOs for their flexibility, ability to strengthen communities and democratization of power
- However, a majority of organizations will not be DAOs as they require a trust in the community's dedication and savviness and coordination can be difficult, especially in crisis
- In the next few years, we may see forms of hybrid DAOs that have some management in place but still promote democratization
    - Like how the US is a representative democracy, not a true democracy

Further Reading

- DOAs, Democracy, and Governances
- eGov-DAO: a Better Government using Blockchain based Decentralized Autonomous Organization
- The Decentralized Autonomous Organization and Governance Issues
- Governance challenges of blockchain and decentralized autonomous organizations
    - The Williamson (1998) framework for economics of institutions