

Eight Institutions for the Evolution of Decentralization

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Abstract

Chapter 5 discusses the core problems Web3 companies need to solve in order to achieve progress for the decentralized economy. The electrical revolution took more than a century to come to fruition, because of the need to develop uniform standards for production, transmission, storage, and utilization. Similarly, the Web3 vision of upgrading the entire global economy requires core infrastructure products to be created simultaneously, and be integrated with each other.

The book can be accessed here:

<https://www.amazon.com/Decentralization-Technologies-Organizational-Societal-Structure/dp/3110673924/>

and here:

<https://www.degruyter.com/view/title/569051>

Chapter 5. Eight institutions

Before the vision of a radically decentralized economy can be achieved, engineers and architects need to solve eight big problems that business solved centuries ago. All eight problems need to be solved simultaneously, and the solutions need to be integrated with each other.

This is similar to the electrical revolution that took more than a century to come to fruition, because of the need to develop uniform standards for production, transmission, storage, and utilization. But in the 1880s the electrification of cities made the revolution seem to miraculously appear from nowhere. The Web3 vision of revolutionizing the entire global economy makes the electrical revolution seem trivial.

Engineers have managed to prototype two of the solutions: decentralized currency (Bitcoin) and the distributed computing needed to make smart contracts (Ethereum). We're still missing most of them. The legal system, the political system, the media, banking, and other services are all needed before the first DAO will be a genuinely profitable addition to our economy.

All of these institutions will be improved, in effectiveness and efficiency, due to the benefits of transparency and liquidity provided by decentralizing their power structures. These eight institutions are necessary for business. Business grinds to a halt without them, but they require a tiny fraction of the resources in the economy when they are running well. It is only corruption that leads them to be perceived as leaching from the economy. Well-designed systems eliminate those economic frictions.

A dynamic design with checks and balances and the incentive design insights of game theory are necessary to keep these networks running productively. The architecture guiding one institution can be reasonably ported to many other DAOs with superficial changes.

The dream of full decentralization is an extreme democracy with autonomous individuals contributing the resources necessary to maintain the organization of the community. Powerful and truly decentralized organizations are now possible, thanks to advances in

Digital information storage, which allows each person to be the authoritative holders of the entire organization's history. No centralized authority is needed to be in charge of the record.

Data processing (computation) allows each person to equally participate in filtering and curating the information.

Networked communication from the internet allows each member of the organization to immediately connect with every other member on the globe. Complete bureaucratic transparency is possible as global communication is speedy and affordable.

Cryptographic tools guarantee security, privacy, and power over personal information.

Distributed computing architectures give security and transparency in establishing network uniformity.

Whenever a healthy decentralized organization in the past began to earn money, it quickly devolved to a centralized institution. Their ideals shifted from the transcendental value which originally united them to a desire for money. Without the previous equalizing ideal to moderate, the competition generated by the profit motive led inevitably to the organization centralizing with rigid rules for who has power and wealth. The largest and most decentralized organizations of the present are non-profit (e.g.,

Wikipedia). This leads us to wonder whether decentralized organizations can ever survive economic success.

The answer is yes. The 5 tools listed above give us new power in designing and implementing decentralized organizations. They allow secure and efficient accounting of voluminous transactions that happen in a decentralized network, so that money can be shared appropriately in an organization without resorting to centralized dictators arbitrating the dispersal of funds. If, however, the goal of the organization is to maintain decentralization (assuming that is preferable), then these tools must be used wisely to prevent the natural concentration of power that occurs when inefficiencies in the economy allow pockets of corruption to accumulate rent-seeking actors.

Finally, no decentralized organization devoted to profit can be successful in the contemporary marketplace against centralized organizations until eight big problems are solved, all at once.

A decentralized economy requires

Money. Coinage.

Bitcoin proved it was possible to create a decentralized digital representation of value. Because this proof of concept technology doesn't have the rest of a decentralized economic environment to exist in, it is not efficient enough to use widely.

Processing/smart contracts.

The executive policing functions of our business and government should be automated to prevent corruption. Ethereum proved this was possible, to process secure and valuable business contracts in a decentralized network. Like Bitcoin, it won't be efficient until it lives in a robust decentralized economy. It won't last unless its governance is fixed.

Still missing are 6 more essential facets of the economy that all need to work together. Each one needs the others to exist in a working economy fit for the average consumer. (Organized in roughly the chronological order of what needs to be built first.)

Reputation.

This is the proper goal, instead of money, for motivating good behavior in business and governance. Properly accounting for reputation switches the incentives from short-term zero-sum thinking to long-term positive-sum behavior. Without building a secure and meaningful reputational system, none of the other aspects of the decentralized economy will be effective.

Governance.

Decentralized power regulation has been a conscious goal since the 18th century. Today the technology has improved, so that it is possible to account for good and bad behavior on a near infinitesimal scale and reward and punish fairly. A sophisticated system of governance is required to effectively adjust to market changes and to maintain stability. Executive (automated policing), legislative (non-automated protocol development), and judicial (both automated and non-automated dispute resolution) governance must be considered.

Reputation and governance are the two most important institutions that are lacking in the decentralized economy. They occupy the majority of our concern for the remainder of the book. Once they are solved, the rest of the missing pieces are relatively easy to supply. Including:

Finance.

Stablecoin: This is a currency that doesn't fluctuate in price. The artificially scarce bitcoin currency is deflationary as long as its market expands. Like gold, its fluctuation makes it unsuitable for daily commerce. Without stability, typical consumers will never hold their checking account in the currency. No one will make a long-term contract for an essential service. Gambling with your contracts is inefficient, economically. Renegotiating contracts whenever the currency changes is expensive, and continually and randomly punishes at least one of the parties. We need a robust decentralized economy (#6, below) before the stablecoin can be efficient—another chicken and egg problem.

Decentralized Marketplaces: Neutral platforms for trades in properties and services are needed for thriving business with various rules for participation.

Banking: provides a necessary service to absorb the risk of less secure but more efficient small transactions. These are then bundled before a more expensive but secure transaction happens with the central bank. In P2P, the redundant and eternal storage of the blockchain takes the place of the central bank.

Underwriting: We need trust that the transactions in the marketplaces will go through, or that otherwise the contract will be made whole by the platform running the marketplace. Underwriting is essential for every type of business transaction, every type of property, every type of worker/service you hire. Every type of economic action is made more efficient when decisions are hedged, so we can confidently change our investments, keeping the market liquid. Lending and insurance are essential catalysts for business, that require someone to underwrite the risk. Like policing, underwriting

can be decentralized and automated, giving each member the power to control the level of security they require.

Services

A diverse DAO ecosystem is crucial. Consumers require many services our current economy provides, that all need to be decentralized, such as commerce and trade jobs. The gig economy is rife with horror stories, but a fully decentralized structure with proper governance could solve such problems.

History

A marketplace must be trustworthy, with momentum. How is attention focused, on which details, with which narrative? What is the internet search engine for the decentralized economy? How do you tell the story of what the data means? How trustworthy is each DAO, compared with other DAOs? We need ratings for everything. Who controls the information?

News services (oracles) and information repositories need to be decentralized.

Transcendental Values

DAOs derive unity from their ideals, their common goals and aspirations beyond the protocols. This final requirement is the most important for long-term stability, and will require eternal reevaluation. Decentralized institutions require strong unifying values to remain coherent.

For the remainder of the book, we will explore these categories, which have mostly been neglected by P2P engineers. The new tools of information technology can make major efficiency improvements in these traditional institutions.

Bibliography

Formating example:

Evans, Dave (Apr. 2011). The Internet of Things: How the Next Evolution of the Internet is Changing Everything. CISCO White Paper, https://www.cisco.com/c/dam/en_us/about/ac79/docs/innov/IoT_IBSG_0411FINAL.pdf (accessed June 1, 2020).

Wikipedia. Last Universal Common Ancestor, https://en.wikipedia.org/wiki/Last_universal_common_ancestor (accessed June 1, 2020).