Blockchain & Decentralized Organizational Structures (DOSs)

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"The world, ladies and gentlemen, is on the brink of new and terrifying possibilities."

Robert Angier(The Prestige)

ABSTRACT

The blockchain is not just going to be a technology that may change conventional finance forever, but beyond that, it may also change organizational structures for real good. The centralized autonomy of the top-level management is vieux jeu now. We have also come to witness top-level management fiascos like Uberlately. An innovative solution for this is a more decentralized system of management in place that distributes the liability of decision-making across the organization in terms of the magnitude of individual job roles that would change with the nature of the decision. Blockchain holds the workplace philosophy that entails the democratization of decision-making. This paper defines and explores a blockchain-enabled concept called 'Decentralized Organizational Structures' or DOSs for short, which is about a futuristicorganizational structure modelling the blockchain technology for business organizations of the future.

Keywords: Blockchain, centralized autonomy, decision-making, decentralized organizational structures, top-level management…

1. INTRODUCTION

Blockchain was first conceptualised by an unknown person or persons namedSatoshi Nakamoto in 2008 through the idea of a decentralized digital currency – The Bitcoin. The current crypto-currency boom is a global realization of a financial innovation that has harnessed the power of blockchain. The wave of 'Lex Cryptographia', which addresses trust and recourse issues in commercial transactions, has been unleased, powered by the blockchain. Technically, ablockchain is adigital logbook of transactions or records (blocks) linked and secured by cryptography, wherein each block contains a hash pointer to the previous block, with a trusted timestamp and transaction data, which makes it inherently resistant to alterations, with a high byzantine fault tolerance. It can be only operated after achieving a decentralized consensus within a network. By the introduction of blockchain, theconcept of a central authority or server has become obsolete, leading to the democratization of processes on a blockchain-based network.

Blockchain, more than being a revolutionary technology, is also a futuristic philosophy that entails the complete democratization of processes, not just within but also beyond the bounds of a digital economy. Thus, the design of blockchain also has inspired several other commercial applications. However, the biggest impact the blockchain is yet to make is an abstract concept, where previously autonomous human decision-making matrixes were deemed irreplaceable – (Top-level) Management. Management is a broader term that distributes the liability of decision-making amongst top-level job titles or executives within an organization, which quite often leads to their centralized autonomy.Organizational structures are usually top-level centric, which make the top-level executives a single-point of trust. If the executives are corrupt by their own work culture or are flawed, the top-level management eventually becomes a single-point of failure, which puts the rest of the organization at the risk of running down the lane.

What if there was a more advanced organizational structure, well distributed and aptly decentralized, on the blockchain? Actually, there is one. The Decentralized Autonomous Organization (DAO) on the Ethereum blockchain. Thus, this paper intends to focus on 'Decentralised Organizational Structures' (DOSs), which is the impactthat a technology like blockchain can make on organizational structures.

OBJECTIVES:

) To elucidate the structural problems faced by most major business organizations(centralized autonomies) of our times.
) To appraise the DAO's organizational structure (on the Ethereum blockchain) and juxtapose it with centralized autonomies.
) To explore the relevance of a blockchain-enabled DOS for marketplace model firms.
) To envision a confluence of blockchain withAI for an I-DOS.

METHODOLOGY:

Data sources collected for the purpose are secondary in nature such asreliable web sources and reputed media sources.

2. CONTEMPORARY STRUCTURAL PROBLEMS

The world's largest publicly traded companies all have a common organizational structure leading from the shareholders to the Board of Directors, to the Chairman, to the CEO, CFO, COO & other managers, vice-presidents or executives of respective operations forming the top-level management. Thus, the top-level management comprising the CEO and his associate executives, alongside the company board and its shareholders are the three most important parties with regard to the success or downfall of any company.

Often when there is a friction amidst any of these three parties, the top-level management becomes weak, ineffective and affects the quarterly performance of the company. For instance, events leading up to the stepping down of Infosys former CEO Vishal Sikka, when a founder and major shareholder had an ideological tussle with him regarding the direction of the company's future.

Moreover, sometimes when the top-level management gets unfettered powers, with the backing ofobsequious associates and persuadable company boards, the top-level management become a single-point of reliance and assurance for the whole company. Thus, vast amounts of executive power gets concentrated in the hands of a few.

Culture and trust flow downwards in today's companies. If the top-level management is culturally, corrupt or flawed in ways undesirable for a company's future, the top-level management ends up becoming a single-point of failure. For instance, Uber, a private company with a great business model, due to its bro-culture under its former chief executive Travis Kalanick, ran into multiple scandals, controversies & PR disasters, until he had to forcefully to step down in June 2017. [1] Uber under Kalanick was once a classic example for a centralized autonomy, where the top-level management had vastly untrammelled powers with the backing of obsequious associates and pliable company boards. Which Sikka may also have desired for, causing a friction between the founders and the management.

Thus, today's organizational structures are a double-edged sword,either susceptible to:

A.   Frictional discord between shareholders/founders and usually a top-level management,because of generation gaps,which are rapidly being caused by technological and cultural advances.
B.   Complete centralization of the top-level management with the backing of obsequious associates and pliable company boards and thereby becoming a single-point of failure.

3. DAO'sORGANIZATIONAL STRUCTURE

The Decentralized Autonomous Organization (DAO) has the world's first blockchain-enabledorganizational structure, which runs on the Ethereum Blockchain, with no top-level management or a company board. The DAO is a venture capital fund, which is completely investor-controlled, that invests in projects that investors decide upon through smart contracts. Smart contracts are pre-programmed protocols (in code) that facilitate, verify, and enforce a contract amongst individuals in a group for a consensus-based decision. DAO was initiated throughhistory's largest crowdfunding campaign that raised over $120Million via an Ether token

sale.Token-holders can directly vote on DAO's decisions on investing in proposals the DAO gets. The DAO is completely governed by smart contracts. The only human involvement is in the form of curators – who verify the proposals and check whether the projects submitted to DAO are legal.DAO is completely in code and open source; it is both transparent and open for audit all the time. Thus, DAO is an exemplar for a pristine form of shareholder(token-holder) governance of a company.

DAO's Functioning Model

DAO is governed by smart contracts that are based on incorruptible business rules, with almost zero human involvement except in the case of curators. There is nothing like a top-level management in DAO. There are three prominent parties involved in the decision-making/facilitating process:

A.   Token-holders: Who are equivalent to a company board, also are the shareholders/owners.
B.   Curators: Supervisors who verify the proposals and check whether the projects submitted to DAO are legal.
C.   Contractors: Those who submit the proposals for various projects who also can be likened to DAO's' temporary employees. No contractor could aspire for permanence.

The contractors submit proposals in the form of a smart contract to the DAO that DAO token-holders would vote upon if the curators would give them a green signal. If approved, DAO would then automatically transfer the approved amount of ethers, Ethereum's cryptocurrency. The token-holders are also eligible for rewards out of the outcome of the contractor's projects, which can be likened to dividends that are paid-out to shareholders. Thus, DAOfosters thedigital democratization of decision-making and doing business.

The following illustration elucidates DAO's functioning model:

The DAO Model
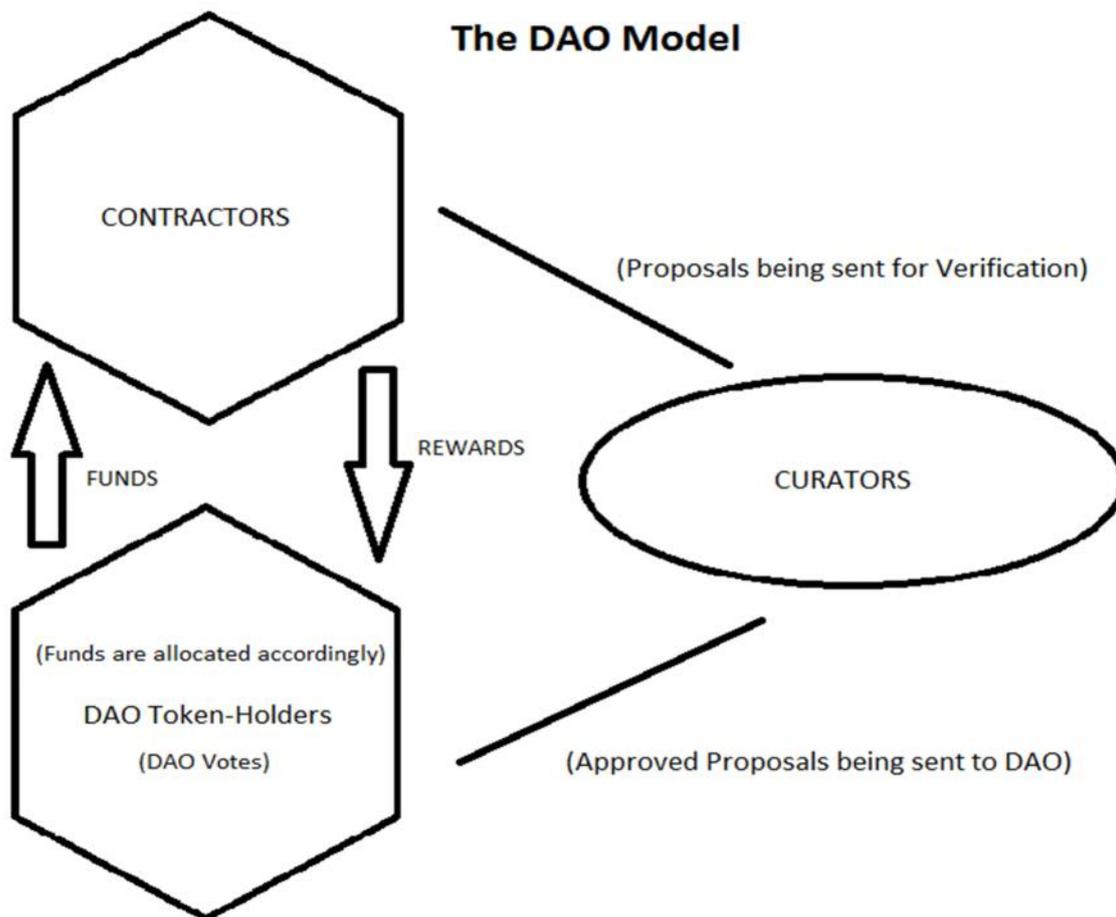
SECURITY & TRUST ISSUES: DAO'S MAJOR DOWNSIDE

In June 2016, DAO was prey to certain internal coding flaws, wherein hackers siphoned off close to $50 Million in an Ether theft to another wallet by exploiting an internal coding flaw. Later, the funds were restored by making those transactions invalid, which then led to an internal tusslesplitting Ethereum into two platforms – ETH & ETH Classic.DAO requires no centralized authority to handle things as it run on the Ethereum blockchain, which as a platform for smart contracts allows anyone to get into a contract without requiring intermediaries. Trust issues are one of the key reasons why central authorities exist.Nevertheless, the 2016 hack has really tested the concept of a blockchain-enabled organisation that can withhold trust without human involvement. In this case, certain internal coding flaws that led to a hack and then a hard fork ruling that invalidated those transactions causing widespread amounts of distrust within the community, which led to the split, and countering the larded fact that the blockchain could automate the human element of trust in such transactional activities caused insecurity. [2]

DAO (VS) CENTRALIZED AUTONOMIES

1. DAO is equally susceptible to frictional discords like centralized autonomies. For instance, 'theEthereum split'(to ETH & ETH Classic)after the hard fork ruling.
2. DAO implies the decentralization and democratization of doing business compared to the centralization of authority and power in the hands of the top-level management in the case of centralized autonomies. Votes (on proposals) are justifiably distributed amongst the token-holders.
3. DAO is in code and open source,which makes both more transparent than publicly traded companies and open for audit any time.
4. In handling security and trust issues, centralized autonomies are better compared to the current version of DAO. In addition, as PR automation is not likely to happen any time in the near future, PR issues will continue to be a Gordian knot for either of them.
5. Smart contracts have the potential to replace/ (perhaps) automate CEOs/ (top-level) managements.

For now, the DAO may not seem to be an ideal replacement for the centralized autonomies of our times. However, an organizational structure enabled by blockchain that incorporates the stellar features of either of them is still pursuable.Beyond probe, DAO successfully pulled of automating the fund's management through smart contracts enabled by the blockchain. The gig economy characterized by the prevalence of short-term work contracts is one arena where a blockchain-enabled DOS could straightaway make a massive impact.

4. MARKETPLACE MODEL FIRMS: DOS IMPACT

Ecommerce firms like Amazon, Flipkart, eBay and ride-hailing companies like Uber, Ola, Lyft, Didi Chuxing that greatly dominate today's gig economy are examples of marketplace model firms. Other like Airbnb, which offer living space and hospitality services are also prominent players. Companies on the gig economy have adapted these marketplace models. By definition, the gig economy is contingent on short-term contracts with contractors,often subject to last minute scheduling. Ride-hailing companies like Uber and others like Airbnb in the hospitality industry, are platforms that connect customers with their contractors.They are more like intermediaries or perhaps middle-men firms, wherein buyers and sellers trade on a platform arranged by intermediaries for which they earn a commission whenever a tradetakes place. To make things worse, such platform providers also have shareholders, company boards and top-level managements. A blockchain-enabled DOS clearly stands to automate such organizations. For instance, Uber: Investors, board, CEO, departmental heads, sub-departments…etc. The complete visualization of Uber's org chart seems outrageous as so many potential points of failure collude.

For a platform-provider like Uber, this kind of organizational structure is excessively complex, which can make it either susceptible to complete centralization or frequent frictional discords. Uber's current valuation at over $60Billion clearly suggests that it is within a PE/VC bubble. However, given Uber's ambitions for world dominance, the human elements of the management and the board cannot be eliminated.

THE BLOCKCHAIN FIX

The future world economy is pretty much going to be a buyer-seller interaction or a service provider – service receiver relation. Thus, the evolution of more & more marketplace model firms isn't going to be a thunderbolt. However, given the structural challenges that they may face in the future if they carry forward these contemporary organizational structures, a lot will be in question regarding their operational and long-term success.
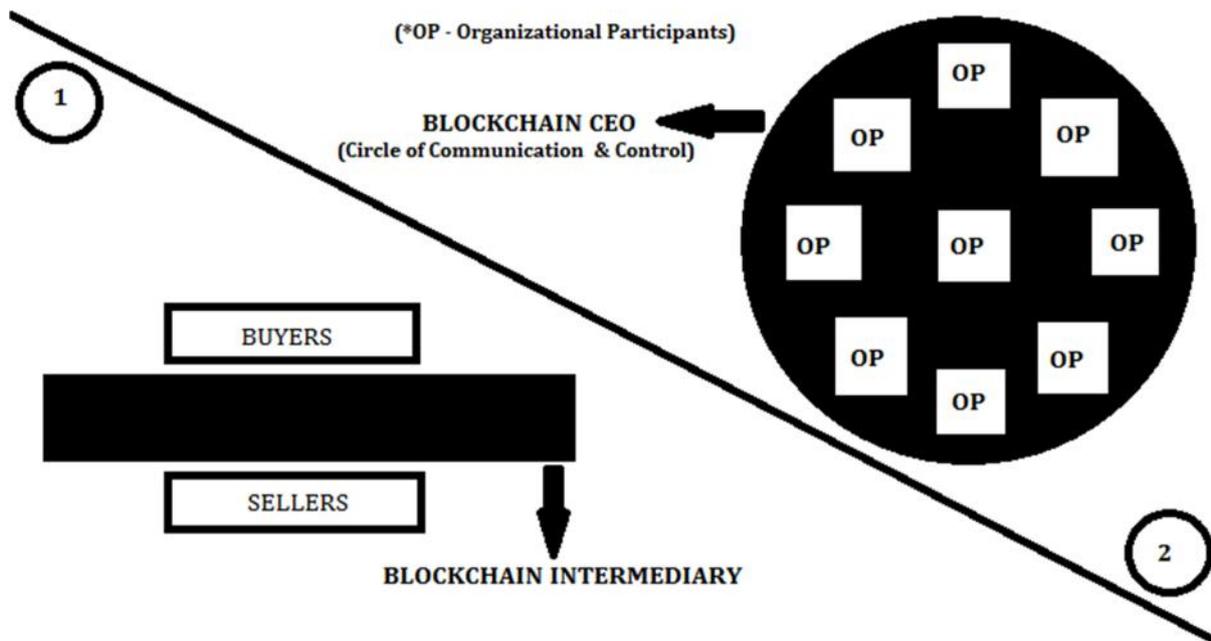
There are possible blockchain solutions –one is to automate the CEO with a blockchain-based line (circle) of communication & control encirclingorganizational participants like the company board,top-level management and other executive positions in the middle and lower strata of management as shown in the second half of the above image (2). The blockchain can be a smart contract programmed to do the tasks of an ordinary CEO and that can make decisions only after achieving a decentralized consensus with the board and the rest of the management.By automating the CEO with a blockchain, both the issues of complete centralization and frictional discords can be eliminated by preserving trust within and beyond the organization. Thus, in this case, CEO automation is preferable to the automation of the top-level management, which can be pursued in the case of VC/PE funds.

Here, the CEO is the connecting line between every member of the board and the management. It can be an app on the desktop or a smartphone, sending periodic pre-programmed notifications, performing CEO tasks, holding votes and allocating voting credit to each job role in accordance with the nature of the decision. For instance, the marketing head of an organization can have more say on a marketing decision.

Rather than being a single point within the hierarchy, the CEO now becomes a circle that encompasses the whole organization acting as a line of communication and control and as a firewall defending the organization's security and preserving trust within and beyond. Additionally, these smart contracts can also be programmed to both completely take-over and do the requisite (if programmed initially) in times of emergency or completely hand the organization over to the board.

Eventually, blockchain technology shall grow big enoughto replace entire platforms like Amazon or Uber and drastically reduce costs over the long run.These can be termed as blockchain intermediaries, as shown in the first half of the above image (1). This is what Bitcoin and other similar alternatives have been trying to achieve in recent times, though it is less likely to happen any time soon!

The irony for now is that the blockchain offers a structural fix for marketplace model firms and a replacement too.A blockchain-enabled smart contract CEO can slowly move on to transform almost every industry, in

some cases automating parts or complete management hierarchies, and in others replacing entire marketplace model platforms.

I-DOS: THE CONFLUENCE OF BLOCKCHAIN WITH AI

An Integrated-DOS (I-DOS) could be the likely confluence of blockchain with AI. Artificial Intelligence, unlike blockchain, is a mechanical mimic of human cognition. For such a confluence to work out, the way data is handled is key. An AI system can consume infinite amounts of data to learn better. While, blockchains provide credibility and a seemingly frictionless way to exchange data.Thus, I-DOS, a confluence of AI and Blockchain could pave the way for autonomous organizations of the future. An organization with a blockchain-enabled DOS can effectively eliminate operational failures, faulty outcomes or complete-process fiascos as smart contracts, programmed/programmable (pre-determined) policies, govern the entire administrative setup on a decentralized blockchain network, while AI simultaneously takes data from all relevant sources and stakeholders, audits the environment and other operational factors, processes them into information and makes key business decisions. Thus, the integration of AI with blockchain in an I-DOS allows AI systems to access and control situations pertaining to the business organization according to predetermined policies and parameters stored in the network nodes of a blockchain, without other processes being at stake, and most importantly, without data being at risk.

As the entire system runs on a blockchain, any change in pre-determined instructions can be orchestrated only by controlling nodes under the consensus of all the stakeholders, making it impossible for any single entity to take control of the system or the organization overall. Thus, human intervention in business processes can be dramatically reduced, except in special situations. That is also to say 'fallible human intervention' can be effectively eliminated, by reducing the chances of purposeless exertions in business processes when everything around is in a state of normalcy. Entire finance, administration and analytics units of business organizations can be replaced with AI-enabled blockchains.

5. CONCLUDING REMARKS

The experimentation with DAO may have been the nadir for a concept like a blockchain-enabled DOS and the apotheosis is sure to come but only when the human elements of such an experiment are rightly regarded. Technology, no matter how potentially enthrallingit may be, can't be given a carte blanche in the issues of security and trust.

Also, the reason why the blockchain can't be abandoned in this arena is, a blockchain-enabled DOS offers potential solutions to contemporary structural problems of most business organizations, whose gravity is only going to be increasingly felt as we move towards a more complex future. A blockchain-enabled smart contract CEO moves from being a single point within the hierarchy to a circle encompassingentire organizations. The biggest change it maymake is in the direction of the gig economy and marketplace model firms. It can automateparts or complete management hierarchies, or replace entire marketplace model platforms.The confluence of blockchain with technologies like A.I and certain requisite human elements will only make these systems more intelligent, efficient, secure and trustworthy without brooding over conflicts, wilful tampering or any such faulty behaviour.

Thus, now blockchain potentially offers to replace autonomous human decision-making matrixes like top-level managements, which were previously deemed irreplaceable!

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