DEMOCRACY 3.0: VOTING THROUGH THE BLOCKCHAIN

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ABSTRACT

Present day Democracy is realised through representatives elected by the people. These elections are periodic affairs. They involve a large amount of money, manpower, resources and time. In the process the administration and day-to-day lives of people are affected. Moreover, present day elections can be manipulated and voters can be coerced to vote against their will. Many a times, the credibility of the election process itself is questionable. In such a scenario, we need an election process that is transparent, fair, inexpensive and convenient. Blockchain technology makes it possible to attain a highly credible and verifiable election process at an inexpensive cost.

This paper deals with upholding Democracy through the Blockchain. The concept of Blockchain is introduced. Then a short recap of Democracy is narrated. The procedure that underlines voting on the Blockchain is outlined. The advantages of such a

system are then deliberated. The paper concludes by analysing the impacts of voting through the Blockchain.

INTRODUCTION

A cryptocurrency (or token) is a medium of exchange using cryptographic techniques to safeguard transactions and also manage the formation of additional units of the currency.

A BlockChain is a widely disseminated archive of data that maintains a continually-expanding register of records fully and reliably protected from any alteration or modification. Each block has a timestamp and link to the preceding block.

A Crypto wallet is an encrypted electronic device that allows an individual to make electronic cryptocurrency (or token) transactions. Each wallet will have a public key visible to anyone. But it can be operated only by a person who has a private key. Transactions on the cryptocoin network are anonymous.

When people send cryptocoins (or tokens) to each other, someone has to keep account of who spent how much at what time. In case of fiat money (or paper money) it is done by Banks (known as Trusted Third Parties, for which they charge a commission).But in

case of Cryptocoins (or tokens), it is registered on a ledger called BlockChain (with nil or minimal fees).

The cryptocoin network makes this possible by detailing all the transactions made during a certain timeframe into a list. This list is known as a block. A certain set of people called 'miners' verify these transactions mathematically and register them on the BlockChain.

Those bona-fide miners who have successfully verified the transactions are paid freshly created Cryptocoins. This is how miners are rewarded, and new cryptocoins are generated. This is also the reason why no transaction costs are levied, as the network (in the form of miners) verifies the transactions.

Democracy is a governance system in which sovereign power is entrusted with the people. The people periodically exercise this power directly or indirectly through a practice of representation by free elections

The earliest Democracy was grassroots Democracy in which people used to come together and directly decide on the laws that would govern their lives. That was Democracy 1.0

Later on, as populations grew and societies expanded, it was impossible for everyone to congregate at a single place and give their opinion. So the representative form of Democracy arose. In this system, people elect their representatives for a certain timeframe. These representatives take decisions on behalf of the people. This is Democracy 2.0. People in this system go to designated places once every few years and cast their vote.

This method is less costly than Democracy 1.0. Nevertheless, it is still a very costly affair in terms of money, manpower, resources and time. It is also vulnerable to manipulation and sabotage. Voters can be harmed and coerced to vote for a particular person. Thus, it has many drawbacks.

In the 21st century we need an election process that is transparent, fair, inexpensive and convenient. Blockchain technology makes it possible to attain a highly credible and verifiable election process at an inexpensive cost. By using this technology, one need not venture out of one's house to vote. It can be done on the personal device itself.

Moreover, people's opinions can be routinely sought on a host of challenging issues. This will lead to Grass-root participation by the people in the governance process. This will usher in Democracy 3.0 where Blockchain technology will put power back in the hands of people and not their representatives who may be vulnerable to many shortcomings.

Blockchain technology can be used for voting. Votes can be cast as transactions. A Blockchain can be designed in such a way that it keeps track of the vote tallies. In this manner, everybody can confirm and agree on the final count as the votes can be counted by the voters themselves.

The voters can count the votes and confirm that the votes have been cast, but they cannot know which party the other individual voters have voted for. They will only get the final tally and a confirmation that those many numbers of voters have cast their ballots.

Only a voter (and the Election Commission) with access to his or her private key will know, which party an individual voter has voted for.

Because of the Blockchain audit trail, voters can attest that no votes were removed; changed or no illegitimate votes were added.

The process of voting goes on in the following manner:

In the Blockchain voting system, the voter will download and install the Blockchain Voting Program (BVP) on the mobile phone or a personal device of their choice.

A few days before the actual election, the voter will present the suitable identity information to have their identity confirmed by the Election Commission or the organization in-charge of hosting the election.

Once their identity is verified, the voter would be able to request their ballot, at which point they are issued a ballot in the form of a token by the Election Commission.
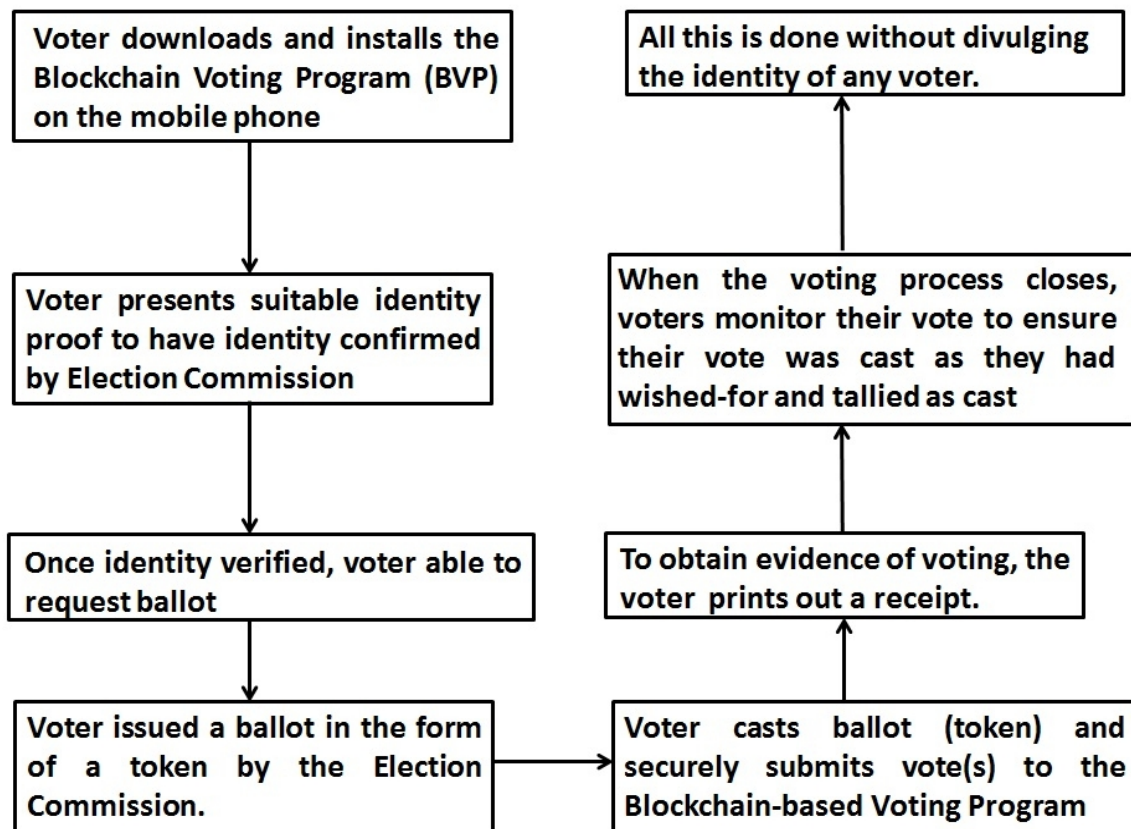
The voter will then cast the ballot (token) and securely submit their vote(s) to the Blockchain-based voting program. This is like transacting a token, but with the vote cast on the Blockchain. To obtain evidence of voting, the voter will be able to print out a receipt.

When the voting process closes on Election Day, voters may monitor their vote to ensure that their vote was cast as they had wished-for and tallied as cast. Each voter can also audit each vote in the ballot box.

One can satisfy oneself of the total being counted by the Blockchain Voting Program as accurate or not. All this is done without divulging the identity of any voter.

Come to think of it, the advantages of BVP transcend government elections. A representative or member of a nation's parliament can directly be in touch with her voters. The said member can put certain issued of her constituency for the opinion poll.

Interested voters can provide their opinion by voting using the BVP. The member will then come to know the mood of the public in her constituency. Based on the poll, she can raise a particular issue in the National Assembly.

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│ Voter downloads and      │          │ All this is done without │
│ installs the Blockchain  │          │ divulging the identity   │
│ Voting Program (BVP)     │          │ of any voter.            │
│ on the mobile phone      │          └─────────────────────────┘
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┌─────────────────────────┐             │ When the voting process  │
│ Voter presents suitable  │             │ closes, voters monitor   │
│ identity proof to have   │             │ their vote to ensure     │
│ identity confirmed by    │             │ their vote was cast as   │
│ Election Commission      │             │ they had wished-for and  │
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│ Once identity verified,  │             │ To obtain evidence of    │
│ voter able to request    │             │ voting, the voter prints │
│ ballot                   │             │ out a receipt.           │
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┌─────────────────────────┐             │ Voter casts ballot       │
│ Voter issued a ballot in │  ───────▶   │ (token) and securely     │
│ the form of a token by   │             │ submits vote(s) to the   │
│ the Election Commission. │             │ Blockchain-based Voting  │
└─────────────────────────┘             │ Program                  │
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In fact, the government can easily organize periodic referendums on a host of issues, which need people's participation.

Should a particular law be passed or repealed?

Should a particular Dam or Nuclear reactor be built?

Should a particular international policy be considered?

All the above questions can be asked on a referendum through BVP;

True grassroots Democracy will become a reality through the BVP.

In the 2014 general elections, The Indian Government spent a whopping $500 million to conduct elections. This cost is apart from the number of lost working hours due to holidays on Election Day and expenditure by provincial governments.

There were almost 815 million eligible voters in India. Compare this to a billion mobile connections already present. We can consider that some well-off sections may have more than one cell phone per person. On an average, almost 90% of the eligible voters have a cell phone.

Those who do not possess a cell phone can visit the local administrator's office to cast one's vote.

CONCLUSION

Elections these days involve a large amount of money, manpower, resources and time. In the process, the administration and day-to-day lives of people are affected. Moreover, elections can be manipulated and voters can be coerced to vote against their will. Many a times, the credibility of the election process itself is questionable. In such a scenario, we need an election process that is transparent, fair, inexpensive and convenient.

Blockchain technology makes it possible to attain a highly credible and verifiable election process at an inexpensive cost. The amount of money saved by using BVP will be immense. There will be minimal wastage of time, money, manpower and space.

Political goons, the likes seen in third world countries will be a thing of the past. Democracy will not only be feasible, but will be affordable too. Elections, a costly festival of Democracy, will become a routine activity of the future if mobile voting through BVP is introduced.

Election activity will be so inexpensive, that governments may automatically opt for Democracy through mobile voting. Africa and other developing Nations, experiencing a chaotic hotbed of strife due to poverty, will be able to stand on their feet, as affordable Democracy can be ushered in.