A two-chamber governance with explicit process ruling and stochastic popular opinion sampling

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Problem

Politics in any form, from community management to geopolitics, is hard but inevitable problem that is encountered when more than one person participates in social or economical activities simultaneously. Blockchain communities are no exception, and expose the political processes in a cleaner and more manageable way. The whole concept of consensus is in a sense a political object. Fortunately, the tools that come with blockchain technologies, especially as flexible as Substrate-based ones, allow us to analyze and build new, more efficient forms of governance.

Any political system should be based on some form of consensus, lest it would base itself in power and violence. Democracy - natural choice with this requirement - in practice often results in suboptimal and irresponsible decisions, while works efficiently in other cases, and the implementation details of democratic principles matter a lot. Here we aim to deconstruct the system and come up with fundamentally sound ideas to build governance upon.

One of the main issues with democracy observed in the world is low participation. Many efforts were made to increase it, but few produced significant results. "Political activity" (measured in voting participation) is decreasing worldwide, and on-chain democracies show that rarely more than few percentage points of voting power manifest in referenda. Every voting move, in order to be effective, requires the voters to carefully consider the proposal, its implications and interactions. With high participation rates, immense amounts of human work hours would be spent by society, and with size of the population and complexity growth, this would quickly become unsustainable, as these management overhead costs would clearly grow faster than linearly. Maybe this is where the global political and trust crisis roots? Even regardless of scaling, with so many voters as modern systems require, every single vote becomes so insignificant that it psychologically de-incentivizes people from active participation.

Another question is voting power distribution. A natural move of "one person - one vote" is often met with criticism about populist threat, where large population of people with low expertise level and often no liability on the matter easily overcomes more expert party with higher stakes. Opponents of

universal democracy vouch either for conviction-based votes, or for professional government managers class to be established.

Although conviction voting system makes sense when community resource management is in question, it has certain obvious shortcomings when the community is not isolated and exsists in larger dominant system:

- a competing community with more resources or a group of communities might destroy the system with overriding vote by buying in;
- actors focused on external systems and short term goals might damage system from the inside disregarding their monetary long-term stake in favor of stake in another place;
- systematic shorting and voting might damage the system's overall state effectively redistributing resources from less wealthy and thus less powerful members to more powerful ones, at no benefit to the former who stay helpless victims in this system and would reject this kind of "consensus".

Professional government class, on the other hand, does not differ much from authortarian government, as there is really no incentive for the professional circle to open up to public and even cooperate once all power is consolidated. This system might work for some time while monopolization of power is not completed, but we strongly suspect that with powerful boosts blockchain technologies provided, this time might have gotten unfeasibly short already.

We couldn't omit mention of benevolent authoritarian governance, even not a single person but a committee, that inevitably results in detachment of governing body from the system participant needs and corruption, as no mechanisms of societal feedback are intrinsic in this political system and whatever additional mechanisms could be set up would be as easily dismantled with absolute power.

Deconstruction

Design goals

The goals of governance are:

1. provide professional rational governance based on expertise
2. align decisions with popular opinion

These are separate goals, and with every political move both requirements should be satisfied.

Rules and expertise

The first governance goal represents, in a sense, the opinion of oligarchy. Oligarchy here is a small subgroup of users (naturally, otherwise this would not be called expertise) that have elevated stake in the system due to their active participation in the ecosystem development. This stake is typically larger than the monetary value of their token share. Initially, naturally, this group is identical with

ecosystem developers team, that started and advanced the project to begin with. This group might potentially even include people external to the ecosystem, as long as they are percieved by the governance to be fitting for the role.

As described by Wittgenstein ("Philosophical Investigations") no form of law could be defined in code or logically consistent non-ambiguous way, instead following the rules should be considered an active social process. Thus it is important to state that it is the society that is responsible for rules being upheld.

So, how do we define the expertise and responsibility here? The answer is obvious: we don't. The government does define itself, drawing the concept iteratively from combined vision of genesis expertise and popular opinion. Whoever is nominated as the experts by the system, are experts, by definition.

Likewise, we are implementing alignment system that allows dedicated expert groups to define rights of ecosystem members. This should be covered in a separate publication.

Popular opinion measurement

How do we measure popular opinion? The goal here is to find an optimal estimator at reasonably low computation cost.

The computation itself would be trivial though, the expensive part here is data collection. The most straightforward approach would be to query literally every member of society on every political decision, but this is clearly impractical. People do not have enough time to process all the political decisions; furthermore, being a single vote in immense referendum debases the motion psychologically and practically - indeed, societies where massive referenda happen show decreasing political activity and participation; there is no feeling of responsibility, and people eventually lose interest - after all, one vote does not matter.

Thus we need to come up with a statistically sound estimator for popular opinion with minimum data collection. Indeed, political space is immensely multidimentional, and for every particular move, all actors would have one or another personal opinion. Even if we could define some political basis eigenstates (certainly much more than trivial 2D political compasses), there is no way to efficiently project all actors on this basis, neither through detailed query, nor through election of representatives. Furthermore, political alignment of actors is, obviously, dynamic and would change, making any projection approaches suboptimal.

Common statistical approach to large multidimentional problems is Monte-Carlo method. The accuracy of Monte-Carlo estimator does not depend on space dimensionality, but only on sample size. As long as applicability of Monte-Carlo holds, we should be able to efficiently sample popular opinion from any existing human population with as few as a dozen samples.

Being one of a small circle of voters would certainly project responsibility and

drive people to study motions in detail and to pay attention. A random small subset - drawing a random person anytime - would effectively collect an attention tax from the society that would produce an efficient governance product.

Class conflict model

This dual governance somewhat resembles the class system as described in works of Marx: the goal of governance is achievement of consensus between interests of "owners of means of production" (responsible stakeholders that actively invest in establishment and sustainance of the ecosystem) and "working class" (regular users benefitting from the ecosystem wellbeing and in mass doing majority of economy work, but generally not obliged to have expertise vision of holistic big picture and having very limited liability), both groups having common interest in economy growth, but somewhat opposing short-term goals at times. Typical and most known example of this divide is treasury spending in Polkadot/Kusama: part of community recognized the value of growth and strived to grant treasury funds to various proposals, another part struggled to burn as much as possible to slow down the inflation (we'll leave judgement of these parties and decision which is which to actual members of the ecosystem and provide this example mostly as external indifferent observer).

Marxist view of the system is, of course, inadequate and stretched, but it hopefully helps grasp the idea of governance problem in more familiar terms at least for some readers. It is not even necessary for these opinions to actually belong to distinct or non-intersecting groups of people - indeed, popular opinion must include all ecosystem members, however taking into account populations of these groups, the opinion of the expert committee would always be negligible in computation of basic popular opinion.

Solution

We propose a two-chamber system to address two different values/goals of the governance.

The top chamber, made of permanent members of the community with proven track of ethical actions and technical expertise, to uphold the expertise-based governance.

The bottom chamber, made of randomly selected accountable members of the community with no record of severe ethical violations, to uphold alignment of governance with popular opinion.

Both chambers should be able to propose actions; any member of government would have this power, with rate limitation. All motions would be voted by both chambers consequentially, starting with the chamber that made a proposal. If motion passes, it gets executed on chain with root power.

Top chamber

The top chamber here is more or less classic governance organ of technical committee present in various projects. This approach was shown to be effective in blockchain ecosystems at different scale and is currently in use in some. There is not much to state here other than the rules for governance rotation could be completely arbitrary - from fixed terms to permanent memberships, the latter was observed to work quite well in many projects where founders retained their positions for a long time (Linux, FSF, Ethereum, Polkadot, etc)

Bottom chamber

The bottom chamber, though, is quite unusual, even though the concept is quite old and was shown to be used historically (Athens, Venice) in real life with great success of democracy, failing only to military invasion where insufficient flexibility of democratic government failed before centralized armed power. We envision that in case of armed conflict, governance issues in blockchain might be of minor importance. Modern jury duty operates on similar principles.

In short, the bottom chamber would elect random actors to perform governance.

Of course, we can't just give random existing accounts voting rights - some would belong to cold forgotten storages, other to payment processing bots, etc. Furthermore, some users might choose to stay apolitical, that is, not declare their opinion by not participating in governance. There is an important question of whether we should define popular opinion by inclusion of these mute voters (effectively society's desire to accept top chamber's decisions whatever they are and reject popular decisions, a valid point of view described, for example, by Hobbes). Some users could be declared by the community to be malicious and be excluded from political process one way or another.

We propose 3-stage filter for the bottom chamber elections.

First layer would be active declaration of willingness to participate in governance. An actor would need to publish an extrinsic that would include them into the next election run. This allows people to go on a vacation, or have another form of temporary absence (like illness or competing interests). Of course, an automatic tool could be implemented to put an account into voting pool at appropriate time thus breaking this system; however, performing such a move would be explicit acceptance of responsibility by an actor and would justify communal countermeasures (like blacklisting if this is exposed, or whatever the community decides to be adequate).

The second layer would be alignment system. The governance should define values matrix that allows accounts to participate in it. For example, some proof of humanity might be required to be passed, and also some alignment with general good behaviour (like a values system that returns rejection from election pool if there are more negative opinions than certain threshold). In

effect, we have here a whitelist and blacklist combination that is explicitly filled by community and relies on thoughtful opinions of actual valid actors (experts).

The third layer would be randomiser to fulfill the Monte-Carlo sampling rule.

It is important to note, that unlike top chamber where outright maliciousness of an actor could be assumed to be extrodinary (yet possible), the bottom chamber could easily contain some number of malicious actors, and we should design with that in mind.

Chambers interacting

Each member of each chamber would be able to propose a motion (in form of an extrinsic). There inevitably should be a rate limitation on this, especially in bottom chamber where we can't assume that no single malicious actor would be elected.

Once proposed, a motion would enter the voting phase in chamber containing the proposing actor. Once accepting or rejecting threshold is reached, the motion is either moved to another chamber, or dropped. In another chamber, voting would have a time limit - considering that one of two powers already accepted the proposal, it should be considered seriously and in timely manner by another. We propose to install a time limit of maximum between some reasonably minimal time (on scale of days) and time that it took for another chamber to pass the vote. Furthermore, the second chamber to vote would not vote for proposal to pass, it would vote to reject - if quorum is reached ahead of time, motion would pass sooner. This way, we pave the path for fast track proposals (things like security updates or urgent financial actions) in a natural and simple way.

Stalled proposals that stay in undecided status in their original chamber might be removed through separate vote from the other chamber if the chamber housing these proposals is too negligent to take effort cleaning them.

Implementation

For this system to work, first the alignment system engine should be deployed and the power of root should be transferred to counsel (the top chamber). Counsel then creates value groups and defines how the groups are approving bottom chamber actors. Bottom chamber is initiated once there are enough actors approved by value group experts.