Concept for GitxChange Hackathon
Decentralized Design Bounty - Propose A Radical Markets Idea To Be Used On Gitcoin

Overview

This is a non-technical concept note for how a crypto-economic primitive called Non-Fungible Governance can be used on Gitcoin. In traditional forms of Quadratic Voting and Liberal Radicalism users aggregate the degree of their preference by using money (i.e. buying votes or donating to a project). Non-Fungible Governance proposes a new way of aggregating preferences by capturing the Effort an individual gives to a community (e.g. Quests, Grants, Hackathons, Bounties, Voting). Allowing communities to set the standard of what is considered Effort can greatly reduce the opportunity for Sybil Attacks and give users more anonymity. Finally, since voting power is tied to non-fungible tokens (NFTs), it affords the opportunity to create a secondary market where NFTs can be sold as Depreciating Licenses.

The Problems

Problem 1: Sybil Attack
Fraud is a major vulnerability for Quadratic Voting (QV) and Liberal Radicalism (i.e. Quadratic Funding). Buterin, Hitzig, & Weyl define Fraud as follows: "Takes place when a single citizen misrepresents herself as many."[1] E.g. Sybil Attack.

There are many proposed solutions for Sybil Attacks. However, these solutions come at the cost of anonymity. For example, needing to tie our GitHub to Gitcoin for funding grants.

Problem 2: Funding Public Goods
Liberal Radicalism on blockchain also has a problem with defining what should be taxed to finance public goods (i.e. The Henry George Theorem or where do sustainable matching funds come from).[2] Unlike the traditional example of taxing property to fund public schools, taxing a blockchain community creates more questions than answers. What's a fair property to tax? Does this tax affect the economy of the community negatively (e.g. reduce its growth or network effect)? Etc.

Solution - Non-Fungible Governance

There are two main ways in which people give to public goods like open source software; donations and volunteering.

Here are our definitions for each:
1. Donations - Giving money.
2. Volunteering - Giving effort.

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[1] Page 15. Buterin, Vitalik, Zoe Hitzig, and E. Glen Weyl. "Liberal radicalism: a flexible design for philanthropic matching funds." *Available at SSRN 3243656* (2018).
[2] Ibid. Page 21.

Donations are efficient and under a scheme like Liberal Radicalism (i.e. Quadratic Funding) they are near optimal in getting a match from a public pool. Money can be used by an organization for the public good in a way that significantly reduces waste.

Volunteerism generates value differently. Something tangible is done for the public good and the volunteer is engaged in a task that is meaningful to them. It is this engagement that builds communities. We call this value derived from volunteering Effort, and it is the key to Non-fungible Governance.

When we look at QV or QF, all current instances aggregate preference through money. Users buy votes or give donations. What if instead we could capture a user's Effort in a NFT and use that as the measure to aggregate preferences.

Let's create a hypothetical about how Non-Fungible Governance could either replace QF or augment it for Gitcoin Grants:

1. To capture Effort, let's create a system of NFTs (e.g. a new class of Kudos). All community members that want to participate in QV or QF must buy an NFT. The capital from that NFT goes into a pool where it generates interest on DeFi.
   a. The interest and capital in the pool can be distributed in any way the community sees fit (e.g. funding public goods). The community votes on this distribution. One immediate way that this could augment QF is that users vote to distribute interest generated from the NFT pool to projects in Gitcoin grants. This also solves some of the issues around the Henry George Theorem.
2. These NFTs can level up by doing things for the community. This is very similar to gaining experience points in games. The parameters for gaining points to level-up are set by the community. For example, it might take 100 XP to move your NFT from a Level Zero to a Level One. On Gitcoin experience points could be earned from Quests, Grants, Hackathons, Bounties, Voting, and etc.
3. When it comes time to aggregate preferences QV happens as follows:
   a. 1 NFT (no matter the level) = 1 Vote, OR
   b. Burning the NFT gives votes = the level squared. For example, a level 10 NFT could be burned for 100 votes. When burned the capital and interest that the NFT represents is distributed based on rules created by the community.
4. The NFT acts as some sort of certificate of deposit (CD) where part/most of the initial cost of the NFT is returned to the owning account when the NFT is burned.

Note: It is not necessary for the NFT to act as a CD (number 4 above). However, the following reasons lead us to believe it would be beneficial:
1. It creates a base value for the NFT on a secondary market or as a Depreciating License. Thus, it would greatly discourage someone from selling a leveled-up NFT for the same cost as a new NFT.

2. It allows other user types to stay engaged in the community. For example, if a user never feels strongly about voting this gives them an incentive to level-up and sell an NFT. Their Effort is still captured and they are being rewarded for helping the community through their Effort.
3. It creates an incentive to purchase NFTs as a Depreciating License instead of buying many level-0 NFTs (see **Depreciating License** below).

Non-fungible Governance would significantly increase the cost of a sybil attack. There would be no difference between buying many NFTs in one account or across many. A participant that tries to steal the vote by buying hundreds or thousands of NFTs would be contributing to the community pool at a much higher rate than other members. In essence doing this would be similar to how payments for votes are redistributed to voters on a pro rata basis in traditional QV.[3]

Depending on what Gitcoin designates as Effort, it may also be impossible for an attacker to level-up multiple NFTs. Designating the actions and amount of work that dictate Effort allows Gitcoin to signify an individual without identifying that individual. This would allow for more anonymity on Gitcoin and reduce Sybil attacks.

NFTs as Depreciating Licenses
Note: This section is not essential for Non-Fungible Governance. However, I included it because it creates more funds for the public pool and incentivizes the use of the NFTs.

In Non-Fungible Governance the NFTs become long-term licenses to participate in voting. They are long-term because it takes time to level-up NFTs and users will only burn them if they strongly want to aggregate their preferences.

There will also be cases where new users to Gitcoin will want to strongly aggregate their preferences without leveling up an NFT and without buying several level zero NFTs. It would make sense for these new users to buy an already leveled-up NFT from an existing user. This is exactly the type of scenario for which Weyl and Zhang argue that a Depreciating License would improve allocative efficiency.[4]

Here is an example of how that could work on Gitcoin:
1. A discrete time period for the license is determined (e.g. one year, one Gitcoin grants round, other).
2. At the end of this time period every user announces a price at which they commit to selling a leveled-up NFT to another user. The NFT can be purchased at anytime for this price. This price also determines a license fee that the current owner must pay to continue to use it. If they don't pay the fee the NFT is burned and the CD value returned.
3. The license fee is added to the community pool. It is never refunded. It does not go towards the backed value of the NFT.
4. If the NFT is sold the full amount goes to the seller.

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[3] Posner, Eric A., and E. Glen Weyl. "Voting squared: Quadratic voting in democratic politics." *Vand. L. Rev.* 68 (2015): 441.
[4] Weyl, E. Glen, and Anthony Lee Zhang. "Depreciating licenses." *Available at SSRN 2744810* (2018).