Background

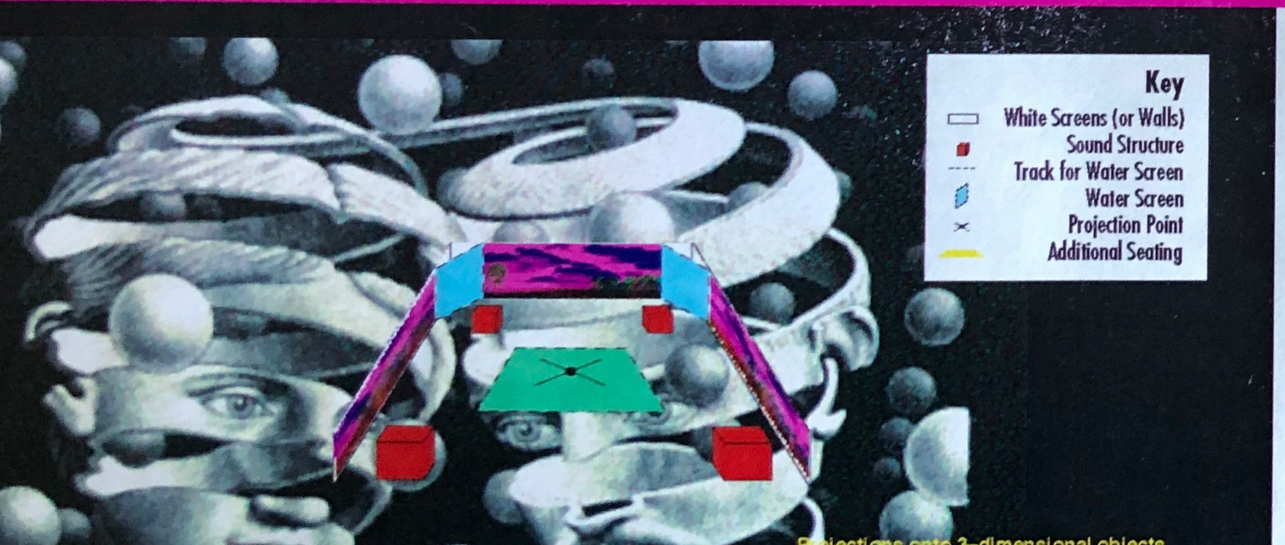
Multimedia Authoring Centre

- Charing Cross Hospital
- 1989-1992
- As we may think (1945)
- Student note-taking system
- Interdisciplinary

Multimedia Authoring Centre

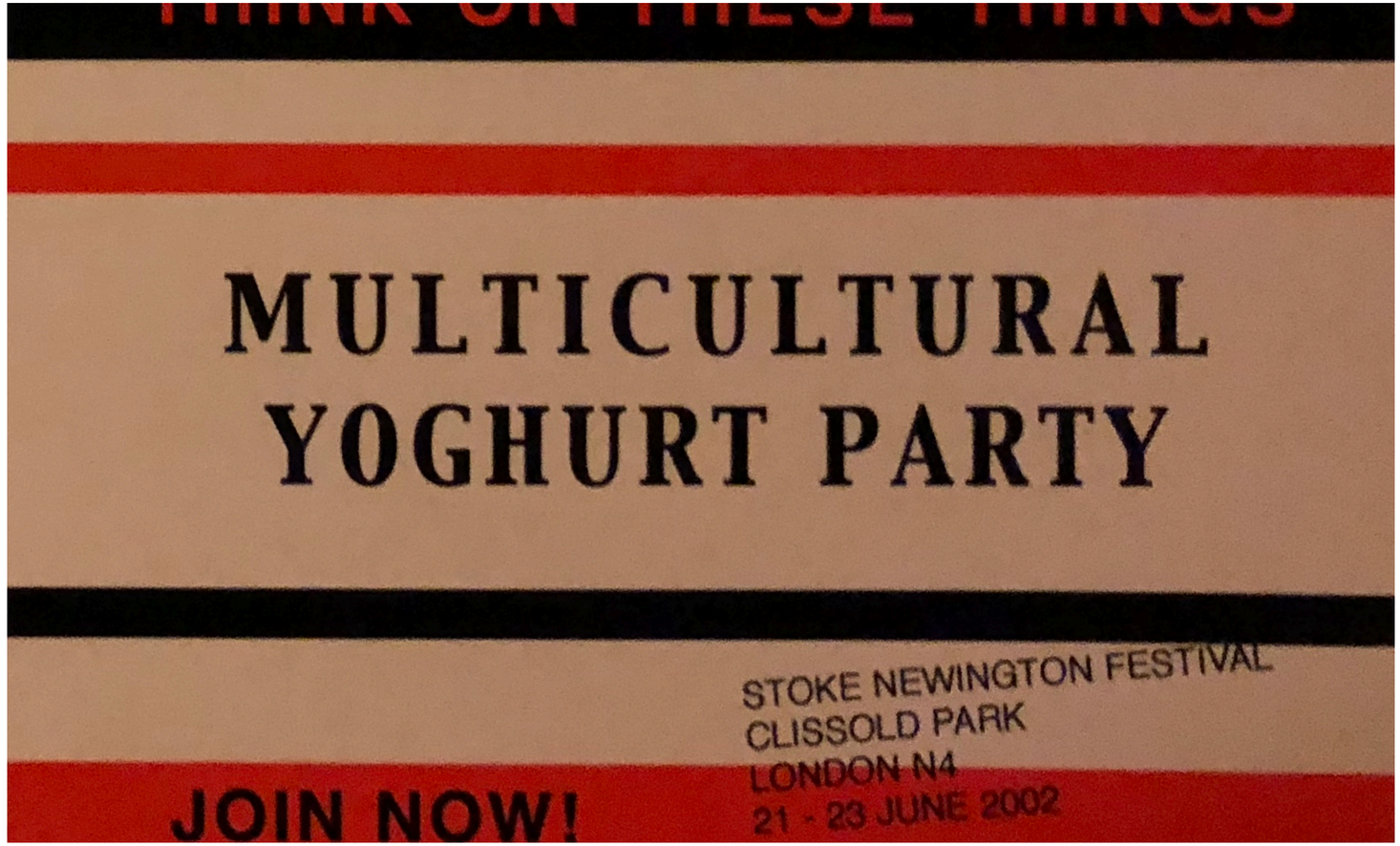
- Wiki (1995)
- 14,000 pages
- 100,000 images
- Publishing Points
- Page-rank reputation

Virtual Theatre



Performance Art

It has not been possible before for performers and an audience to interact dynamically with the environment that they are placed in. This allows new and richer forms of communication between



Liquid Democracy

The science of reputation fields.

Recently

- Liquid Democracy (98-2003)
- Liquid Law (2006-2009)
- SciMatch (2012)
- Ethereum + Governance (2014)
- SciTopia (2015)
- Federated Wiki (2014 - 18)

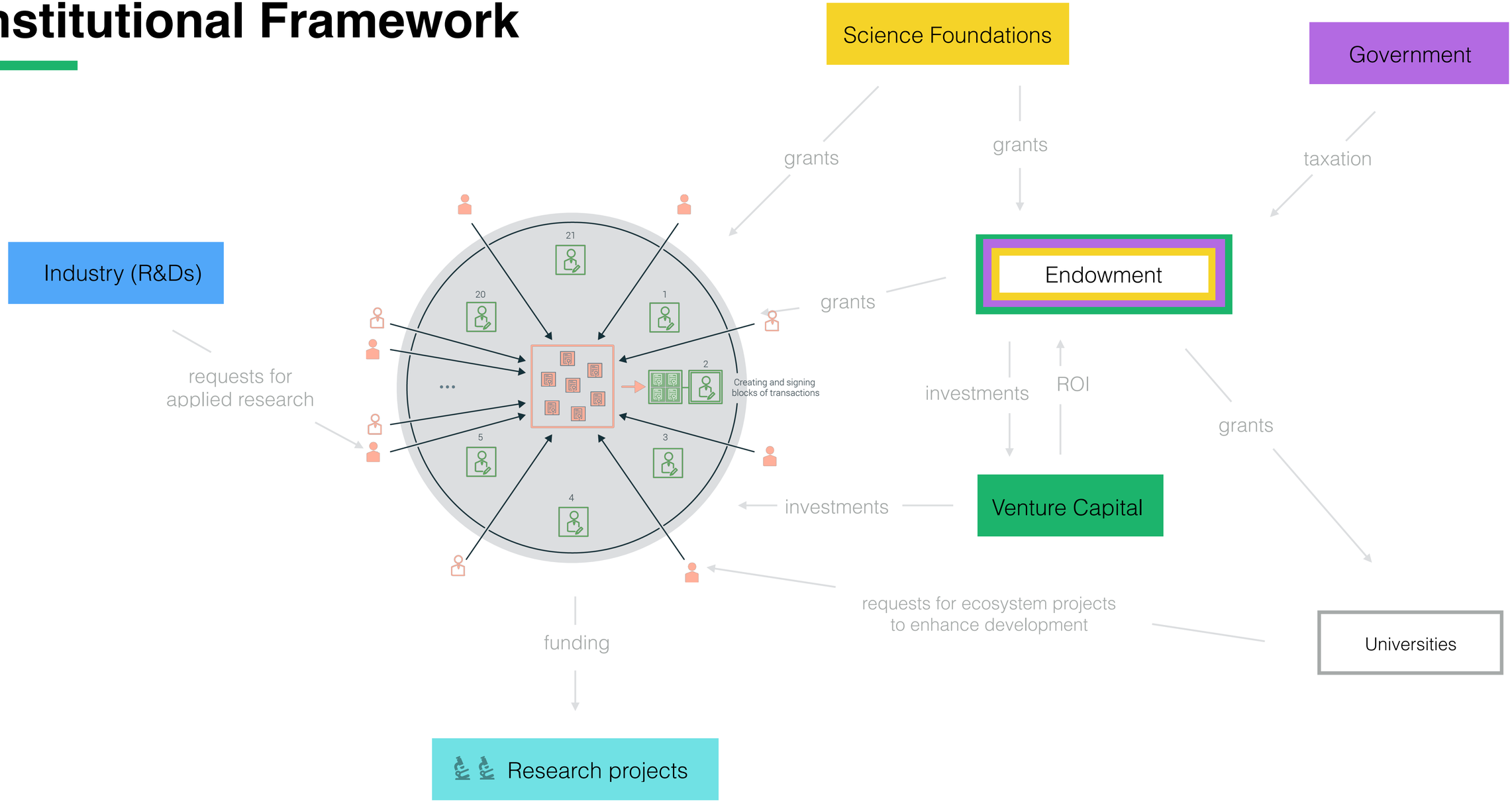
What Problem?

Humanity has **Palaeolithic Emotions**,
Medieval Institutions, and (through science) **God-like Power**.

That is an extremely dangerous combination.

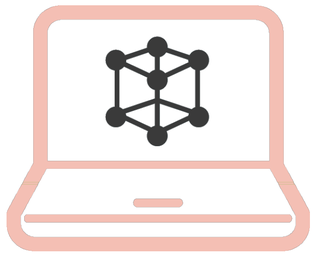
E.O.Wilson

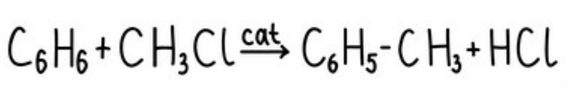
Institutional Framework

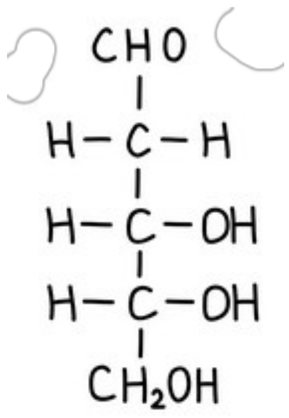


Problem: cost of due diligence?

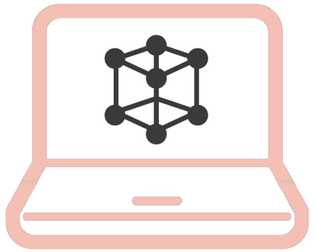
Research X

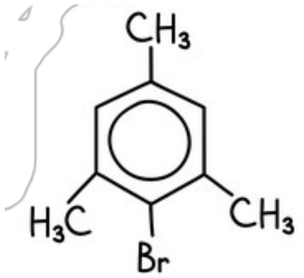


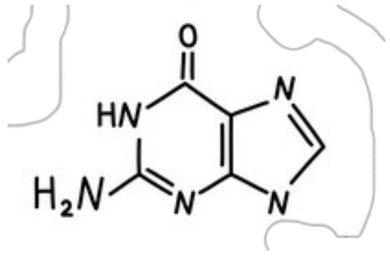




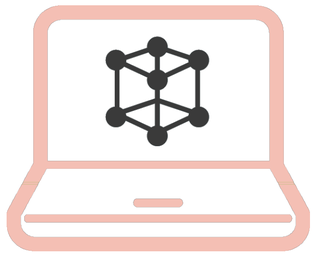
Research Y

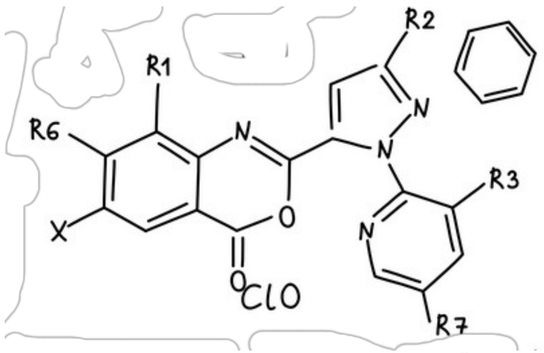


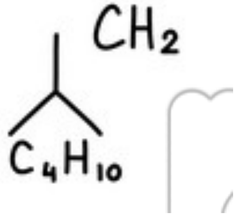




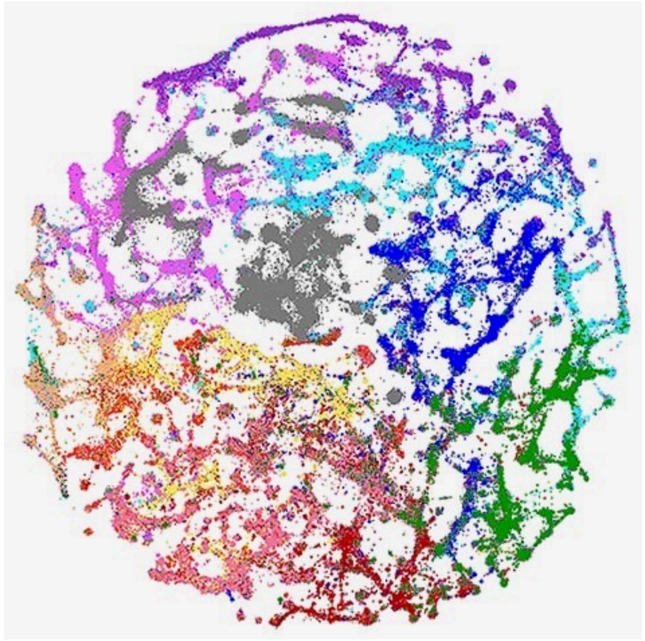
Research Z

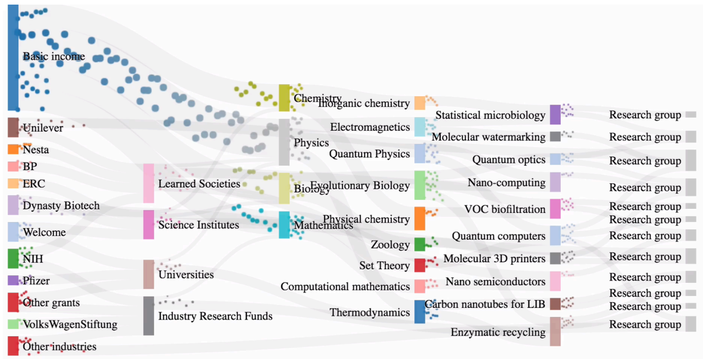


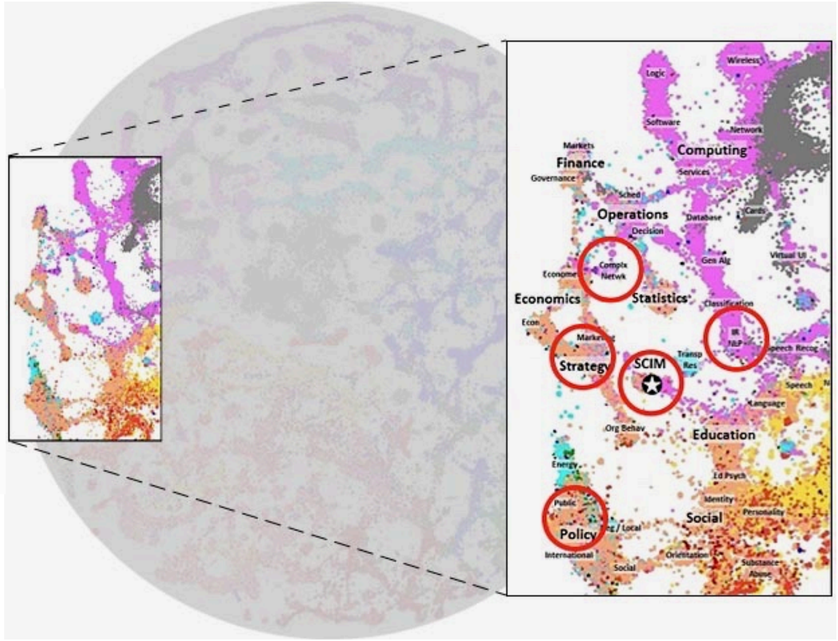




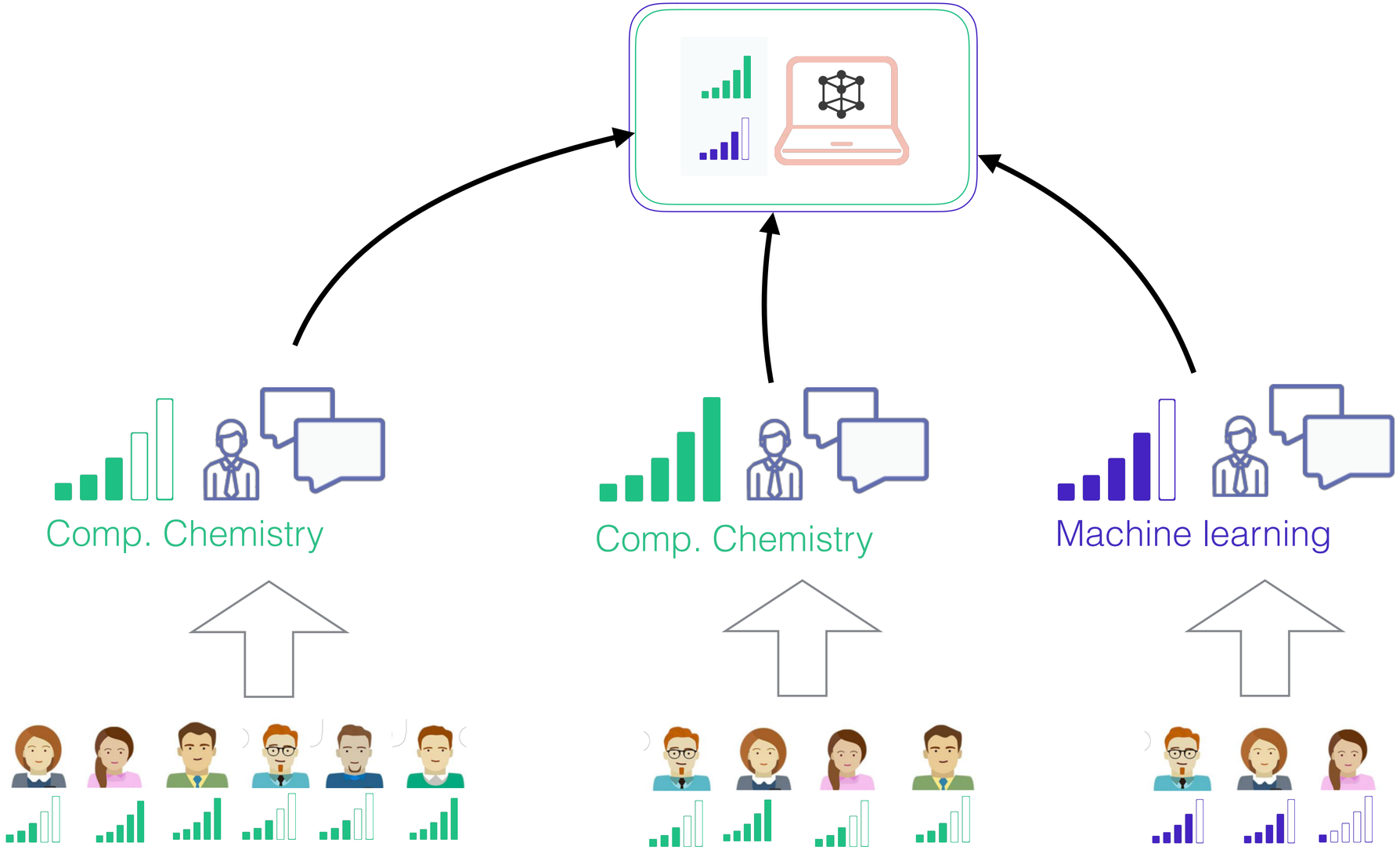
Tokenization of Knowledge

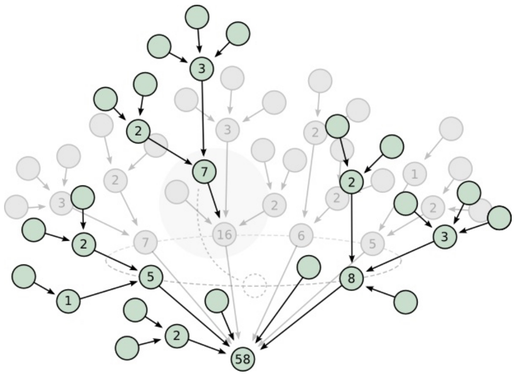






Cascade of Reviews





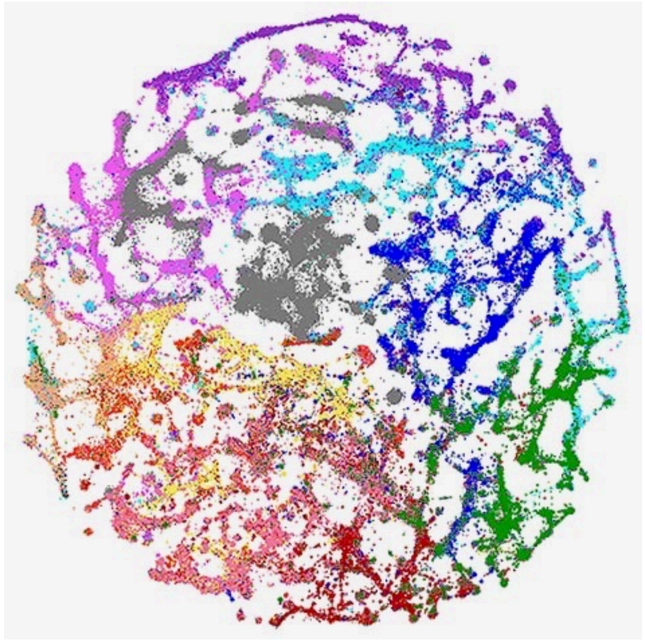
Liquid Peer Review

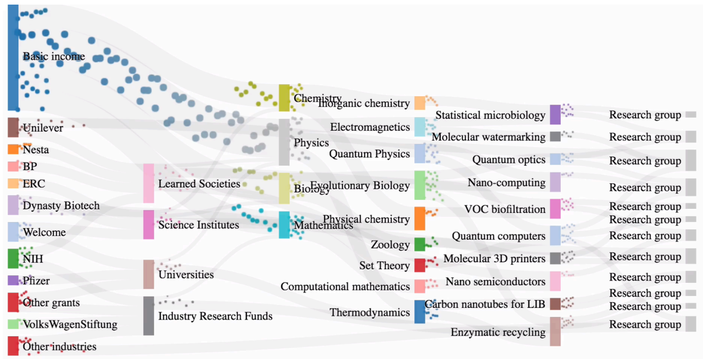
$$C_r = C_{ea}\frac{E_r}{\overline{E_r}} + C_{va}(1-\frac{1}{n})\frac{V_r}{\sum_{i=1}^{k} V_i},$$

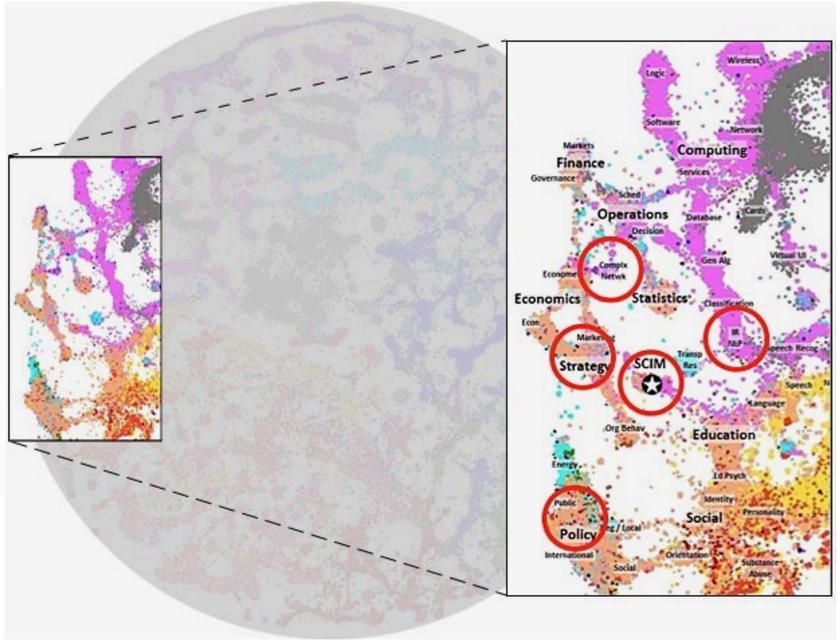
$$S_{dp} = \sum_{r=1}^{k} m_r C_r E_r,$$

Market of Evidence Based Peer Review Algorithms

Due Diligence at Scale







Governance Journal

Journal Co-creation

- Co-design with scientific community
- Start with Governance Journal
- Minimal Viable Governance
- Common Law Algorithms

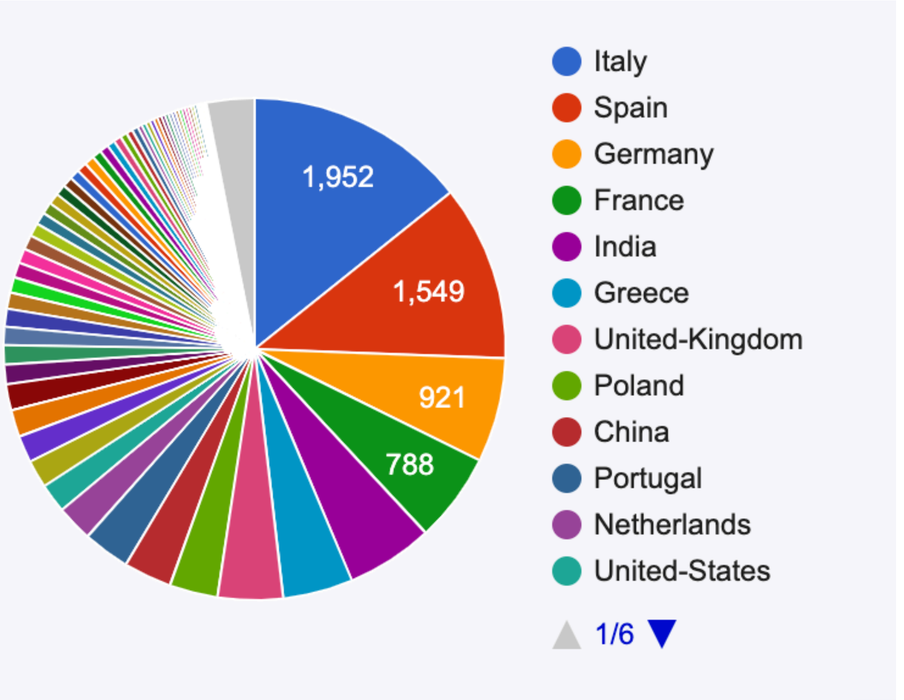
- Scientific Improvement Process (SIP)

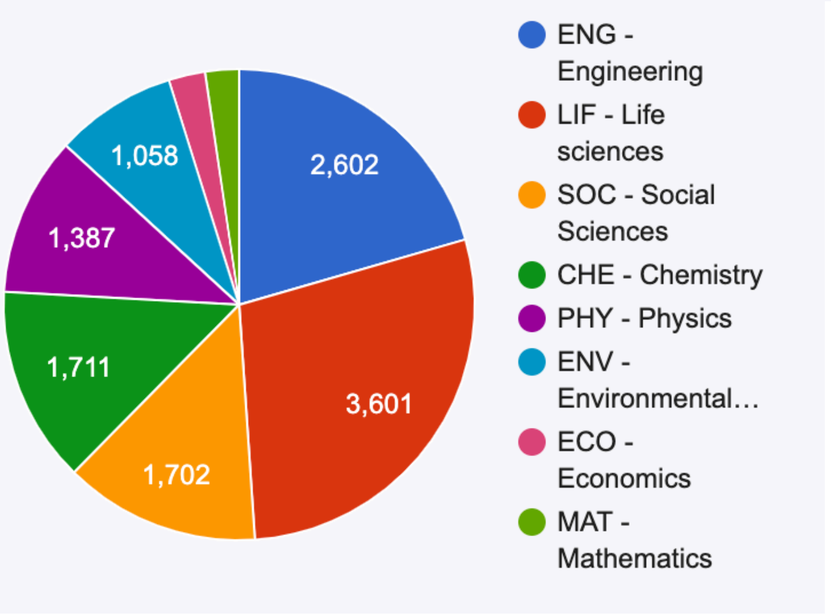
- Provocation
- Scientific Deliberation

- Scientific Journal
- (Liquid) Peer Review

- Mathematical Models (funded)
- Smart Contracts (funded)
- Longitudinal Studies (funded)

- Owned & authored by the scientific community





- Law
- Anthropology
- Epistemology
- Cryptoeconomics
- Management
- Interdisciplinary

MT: In the paper *Interactive Coin Offerings* you wrote with Jason Teutsch, you raised the point that a few token or crowdsale mechanisms didn't go as expected and offered new perspectives. Can you give us a short overview of what the idea was?

VB: The idea is a coin sale, where you would have a long period of time where anyone can send a buy offer specifying at what maximum valuation they are willing to buy at. Either after some point in time, or when some cap hits, the buying period would stop. There might be further periods in which people could ask for refunds, but then after that, the system basically takes the set of people who would be willing to purchase at the highest valuations and gives them the tokens. The idea is that the system makes sure that you only get tokens at a valuation which is equal or lower than the valuation you're comfortable with. It tries to satisfy the goals of fairness, giving everyone a chance to participate and the goal of not setting a cap that accidentally ends up too low, which just rewards the people who get in first. And it removes the need for the person who's creating the sale to try to even figure out things like a cap if they don't necessarily want to do that. It also provides us a guarantee of participation. So, if you participate then either you get in or the valuation is so high that you would not have wanted to get in, anyway.

MT: Who tried this particular token sale yet?

VB: The closest thing that we had was probably the reverse Dutch auction for the Raiden token, but the interactive model is still a bit nicer because it's not time dependent. But there is definitely risk. I hope we see some small-scale experiment just to see how it works economically. Even the Raiden sale itself is a bit of an experiment because it is a vaguely similar mechanism in some sense, and it actually seems to be working fairly well.

DP: Do you see also an option for round based ICOs in the future, where they act more like the traditional funding rounds? Right now they are all up front...

VB: I definitely think that moving beyond the up-front model is important. Gnosis did what I think, in a lot of ways, is the right thing. They did do a reverse Dutch auction, but they also had a fairly low cap–which worked, but they ended up keeping 94 percent of the tokens and without the cap, they may well have been one of the other 100-200 million-dollar sales. Because they capped 94 percent they got accused of being a central bank with unilateral control of the token. There is a bit of a trade-off here. If you are taking ten million dollars from people who are willing to give you a hundred then that means either you are wasting ninety million or you're creating this protocol where you end up keeping 90% of something.

There are a bunch of fairly equivalent solutions. One of them is that you can have a sale that gives people the ability to refund for some point of time. The other one is that you can commit to releasing the other 90 percent on some schedule. The 90 percent could literally just directly go into a market maker that enforces the commitment. So, doing things like that removes this kind of centralised trust level. It definitely is going to require more experimentation and few more failures though.

The other thing is, it does seem like the ICO space is cooling down a bit, so the experiments may well end up being smaller, which is probably a good thing, too.

DP: Do you think an approach would work, where people basically have to hit development milestones and give money back if they don't deliver?

VB: Yeah, I think that's definitely a good idea. The one parameter in that model becomes who decides when the milestone was hit. So, one model that I think is actually interesting is one in which the participants in the sale basically vote on when the milestones are decided. And if they would really want to, they could just vote to fire the developers and move the funds to someone else. That's something that should be tried more.

DP: Like in a prediction market?

VB: Prediction markets are one way, but the other way is just literally a vote. So, if 51 percent of the buyers say cut off the funds, then the funds get cut off.

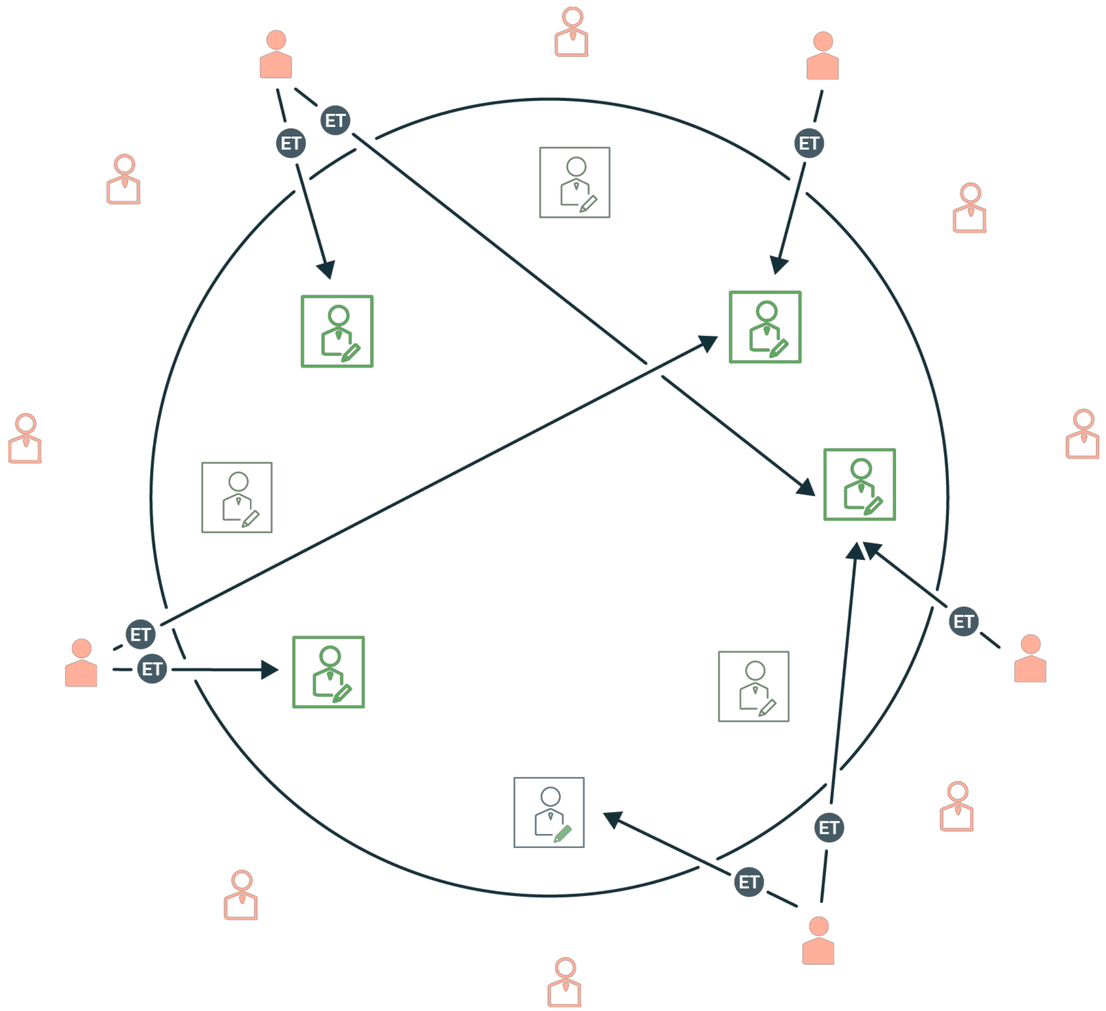
MT: In your 2014 paper you were explaining the idea of futarchy from Robin Hanson, and I still find it very relevant but also it was written in a time before there was the Fork.

VB: Futarchy is definitely an interesting idea, but it's main challenge is a measurement problem. So basically, for futarchy you have to have an objective, and then how do you measure from inside the system whether or not the objective has been satisfied? If you have a proof-of-work system, you can do things like optimising for mining difficulty, but even that's a fairly coarse estimate. That would be a proxy for the price of a token and that might be one thing you want to optimise for, but in a proof-of-stake system even that's very difficult.

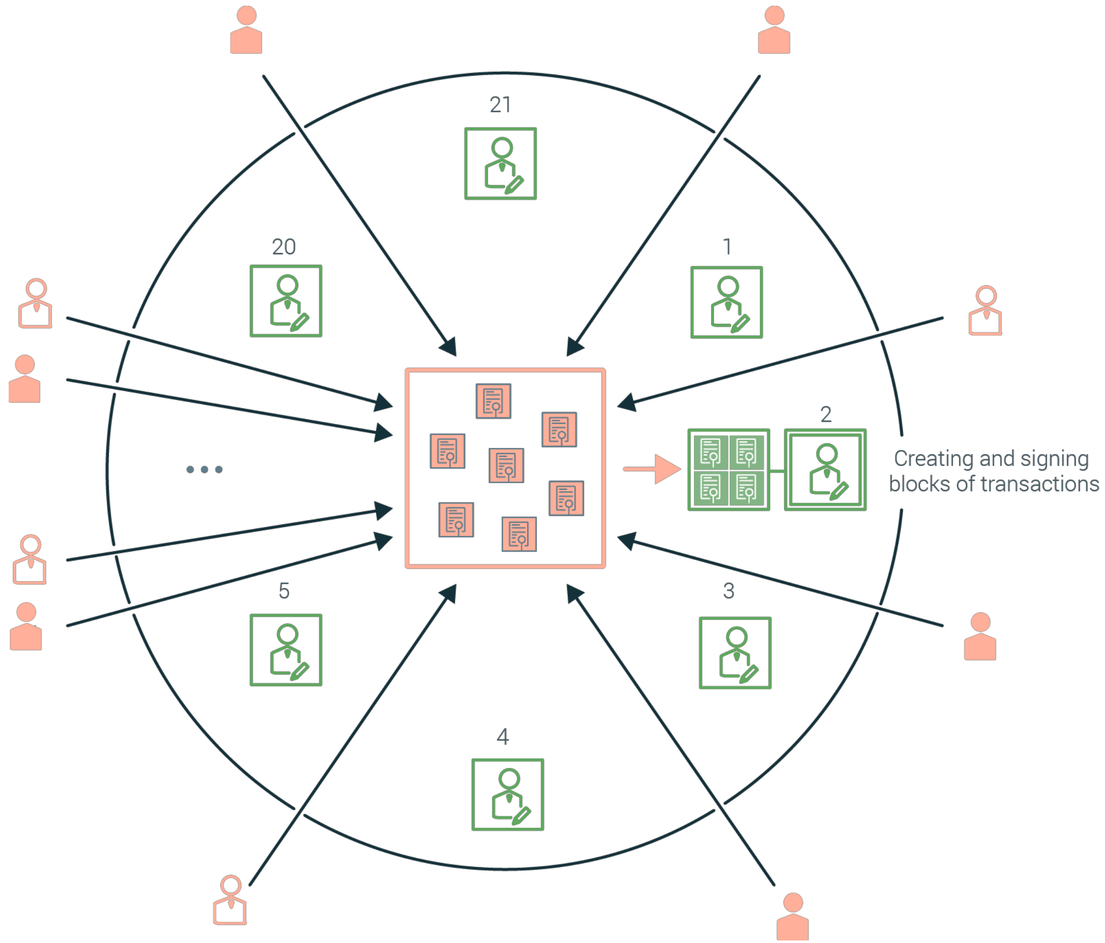
I'm not really sure if there is that good a way of measuring things, especially at base protocol layer without introducing new vulnerabilities. At the level of DApps it might end up working much better. We'll see.

Conflict of Interest

Block Producers Election



Block Production Process



Minimal Viable Governance

- Aim is to bootstrap governance
- Start with discussions
- Evolves through egg, caterpillar, butterfly

- Minimal legal form
- Mediated by technology
- Adapts to context
- Agile legal methodology

- Models complexity through nesting
- Fork, clone, adapt