Preface

One of my favorite presentations this summer was this particular talk by[@cwgoes](). The presentation explains Namada and Anoma through the affordances they provide for Autonomous Ecologies. I think this talk is very helpful for understanding Anoma the network - machines, people and communities and how they may interact with the Anoma protocol.

I also enjoyed the description of how Namada helps us bridge the gap between surveillance on Ethereum and the arboreal Taiga of Anoma. This talk is highly accessible for all audiences and provides one of the best descriptions of fractal instances to date (watch until the end). Below you will find the video, slide deck and notes from the talk. I highly recommend the video recording.

- [Talk]()

- [Slides]()

Introduction

Namada and Anoma are protocols for Autonomous Ecologies. What are autonomous ecologies?

Autonomous Ecologies are groups or organisms that want to define their own boundaries, self-govern their internal operations, and interoperate with others.

Westphalian Ecologies

Let's say, for the purposes of contrast, we live in the world of Westphalian ecologies. We are characterized by a rigid and standardized set of legible and enforceable relationship types.

Concrete examples;

- employer / employee

- employed / unemployed

- for-profit / non-profit

Why?

Often times it's easy to resort to a theoretical position where you see something you don't like int the world, and you resort to the assumption that something consciously caused this. Sometimes in the privacy space or cypherpunk space, it's easy to attribute some type of agency to the actors or state itself that is evil. Things are explained in terms of someone intending to cause harm. Occasionally, this may be true. However, it doesn't explain structural, systemic patterns that reoccur across different societies in many different cultures across the world. In particular, it doesn't explain how to create a new equilibrium.

When looking at these standardized relationship types mentioned above, that Westphalian ecologies employ, they don't seem like they are the result of any conscious bureaucratic ill intent. This standardization is not the result of evil, it is the result of optimization for state legibility. The reason these relationships must be legible to the state is that the state guarantees to enforce them. The state guarantees to enforce laws that govern employers/employees, for-profit/non-profit organizations, laws that govern unemployed / employed people.

When we write contracts and encode the relationships which we have with one another in this framework, we are asking the state to enforce these commitments. The state guarantees enforcement of the commitments people make to each other. Fair enforcement requires legibility and standardization. In a sense, we ask too much of the state. Sustainable self-governance requires internal commitment accounting and enforcement.

We agree in the social equilibrium to have commitments which are enforced, so employers and employees don't need to trust each other. There is some kind of overlying commitment enforcement system. However, we will be limited. If we are going to ask the state to enforce our commitments, we are limited to the things that the state knows how to enforce. If we want a different system of self-governance, we need to be able to account for and enforce these commitments internally.

A key distinction between Westphalian Ecologies and Autonomous Ecologies. AEs will not rely on the state. They will rely on protocols both technical at the deep level and social protocols surrounding them and governing their use to enforce their commitments themselves.

"the other sort of state"

Interestingly, you observe this convergence of language, where we use the word state to refer to two things which seem very different. To refer to the unifying governing set of people involved in a Westphalian nation state style systems of law and enforcement, and to refer to the piece of data that says if you own a cryptokittie on the Ethereum blockchain. These types of state may seem different, but this perspective illuminates the way in which they are similar. In particular, the

difference here is

the types of commitments we can enforce by protocols both social, technical, and sociocultural, if we can do them through self-governance, don't need to be legible to the state.

In Autonomous Ecologies this can facilitate a type of Cambrian explosion of relational ontology. As opposed to everyone being forced into the straight-jacket of specific type of relationships oriented around simple dichotomies which are easy to define, standardize and enforce. Large bureaucracies were designed for large industrial production systems. Is this the current problem we should be optimizing our society around?

The hope for Autonomous Ecologies is that they can instantiate a re-flourishing of different kinds of relations so that instead of being excessively standardized, organizations will be excessively diverse.

- Many tokens

- Many metrics

- Many types of relationships

- Subtlety, nuance, and context-specificity

Probably not all of these experiments will work. It's not only state law that causes these specific set of relations to be common. It's also how people are used to working together. These types of relationships produce sustainable organizations. The hope is that with the constraint of state legibility removed, we will see a lot of experimentation. From that experimentation, we can perhaps understand some new, different sustainable and interesting patterns.

You can see some examples of this which are encoded into language. For example, at AE2 there are four different organizations describing themselves as;

- Post-web society

- Coordination collective

- Vibe-care collective

- Public goods laboratory

What are these? They describe a pattern of relationships or a pattern of coordination that the people involved in these organizations have designed together. They're intended to describe the orienting goal and organizing principles of the organization. These are descriptions of what the organizations are to the rest of the world but also to their members. You can expect to see a flourishing of relational ontologies within organizations.

Where do Autonomous Ecologies Live?

Presently AEs exist, you can see the aspects of this in many DAOs. However, they live in the surveillance state of Ethereum. This is not a criticism, just a statement of fact. The state of Ethereum is subject to surveillance, and this is the territory where autonomous ecologies are operating.

The hope with Anoma is to provide an arboreal Taiga forest to which some of these Autonomous Ecologies can eventually move. To provide what we think these AEs will need at the protocol layer, they will need to define, account for, and enforce their own commitments;

- Neutral, but value-explicit - must allow communities to define and enforce different values

- Distributed accounting - account for the commitments communities make to each other

- Programmable commitments - program exactly what commitments should mean

- Programmable information flow control - within and with other organizations

This may take a long time. In between the state of the surveillance of Ethereum and the arboreal Taiga, what does it look like? The twilight zone.

Namada is an attempt to help bridge these world protocol-wise and community-wise and philosophy-wise.

What can Namada provide for your Autonomous Ecology?

- Private payments for previously public assets

- Shielded actions for public application interoperability

- Public goods funding for the private stack

You'll notice the words private and public in each of the bullet points. That's not random, it's representative of how we are bridging between these worlds. We want to support privacy where it counts, but allow for interoperation with the public world.

Private Payments

- One-hop from Cosmos

- One-hop from Ethereum

- Shielded rewards for sitting tight

- Sharing is caring, privacy - the more users share a privacy set the more privacy everyone has

Shielded Actions

- Keep your assets shielded at rest

- Initiate an action on Namada

- Unshield just what you need

- Send it elsewhere (Ethereum, Cosmos) to use the public app - a swap, a lending protocol, a DAO vote, or something else

- Results routed back and shielded again

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- Add a threshold signature scheme like FROST, and you've got a DAO

Public goods funding for the private stack

- PGF is as important a use of protocol token inflation as a consideration for the community as is Proof-of-Stake security

- Namada has a PGF system based on [Stewards](#) who can nominate things for an optimized fast path to payments or grants

- PGF is not altruism - if we want a world of flourishing autonomous ecologies we need collective funding for collective goods.

We can't do it alone. If you look at what safety for Autonomous Ecologies looks like in this twilight zone in between worlds, it still requires some patch-work protocol quilting. Here is an example set of tools;

- Signal for communication

- Namada for assets-at-rest

- Penumbra for shielded swaps

- Nym for the network layer

- Skiff/Cryptpad for the docs

- (etc.)

These are a bunch of different protocols that weren't really designed to work together, but its workable. There is a lot of progress here, allowing for the ability to interoperate with the public world.

What can Anoma provide your AE?

Anoma provides a unified base operating system that generalizes in appropriate ways and doesn't make decisions that we aren't supposed to be making. As we understand, our roles as protocol designers is to not make decisions but instead to figure out the general primitives and general structure of relations which these distributed coordination protocols need and to parameterize out all the choices of trust about privacy information disclosure, so those can be made at runtime by users.

This involves unifying a bunch of things. We spent significant effort to get the same identity system throughout the whole

stack. So that if you pay to an address, this is also an address you can send a message to. These concepts of identity are unified that the p2p layer can understand how to route to any kind of identity used at any layer of the system.

We are also working on programmable information flow control,

which will enable stuff we don't currently think of as being necessarily important for privacy. This is not the absolute next step for privacy, but it will be important in the future. Take private consensus, for example. If we are in a seriously adversarial scenario, what an adversary will try to disrupt is your ability to come to consensus. We see this in things like union busting, for example. The adversary is going to try and tamper with the system that allows who they now designate as their adversary to come to agreement on how to act. Anoma tries to make commitments and assumptions explicit, so they can be tracked in the system - automated accounting. We are building something called fractal instances.

Our Endgame (or, really, the beginning of a new)

Fractal instances for Autonomous Ecologies

How to think about fractal instances

Fractal instances are not

like build your own blockchain. They are a different thing. A better way to think about fractal instances is as consensi on demand. Currently, the typical user interaction with the blockchain is inverted. You first choose an application which will be hosted by some consensus provider, then you decide what to do. You make the choice of consensus first and action second. Fractal instances invert this, you make the choice of action first. According to the action you are taking, you decide what type of consensus to use. For example, if you are sending some kind of payment within your organization, you only need organizational consensus. If you are sending the payment across a federated group of organizations, then you need their federated consensus. If you are sending some kind of global payment to someone across the world whom you do not trust, then maybe you need global consensus. However, we want to derive what kind of consensus you need from what you are trying to do.

Discord

Fractal instances are designed to allow application data and logic to move freely across trust boundaries. A good example of a permissioning system that has the level of complexity we intend to be able to represent is a discord chat - it has complex multi-layer permissions designed for communities with complex multi-layer relationships. Discord communities are not typically all employed by the same employer, for instance. The system of control is hierarchical but there is a level of parameterization of these relationships that it is important to understand and represent in decentralized systems.

Anoma Node

This entails that the Anoma wallet just runs an Anoma node. There is a role distinction in the network but the roles are dynamic. Instead of having different specific protocols which have different specific roles we have a protocol thats universal but can be configured to perform different roles at runtime.

Fractal Instance Analogies

- Less blockchain, more fancy spreadsheet

- Built into the relational structure of usage

- e.g., layerd permissioning in chat

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- Technically also a rollup depending on how you define rollups.

- Everything is a rollup

- Everything is a rollup

Conclusion

We work for you Autonomous Ecologies.