Governance through code

Throughout time governance has been the single most important tool for us, homo sapiens, to thrive. Our capability to form complex governance structures made us distinguish ourselves from other animals. More recently governance structures have become solidified in systems of bureaucracy and business hierarchies. Governance truly is the glue that holds together human societies and it is therefore still our most important tool. With the rise of the internet and advances in cryptography, online communities and new forms of governance are increasingly emerging. In fact, governance through code is the single largest innovation in the field of governance since the company. Yet, new advances made in this area barely get the attention they deserve.

First however, let us go back in time. Back to our forefathers, of which there were no more than 10.000 on the face of the entire planet. Back to a time where we weren’t the only type of humans around. Yes, you read that right: 70.000 years ago, there were multiple species of intellectually evolved monkeys walking the face of the earth.

We, the homo sapiens, were only one of many. Contrary to popular belief, other human species, such as the homo *soloensis*, the homo *denisova* and the *neanderthals* had evolved separately from homo sapiens. Yet, about 30.000 years ago they had all vanished from the planet. Scholars increasingly agree that there is a good possibility that we, homo sapiens, have eradicated them all.

This raises questions. How? Why us? What had made homo sapiens capable of wiping out all these species? How come we are here to ponder these questions, instead of the far stronger neanderthals, who had also evolved cognitively?

The answer lies in governance.

We, homo sapiens, are inherently territorial. To ensure survival, we organized in tribes which worked together to hunt and gather. As a tribe, having control over one’s own territory for hunting and gathering was advantageous, so we would fight with others over fertile lands. Of course, we did not actually ‘own’ territories as many other animals made more use of it than us. However, the sense of territorial ownership gave us common goals and allowed us to organize ourselves to pursue them.

Living in tribes in order to pursue our territorial interests has allowed us to govern ourselves effectively. Most species of the homo family were not capable of maintaining a tribe larger than about 50 individuals. When a tribe grew in size, members would generally fight amongst themselves or split up. Not homo sapiens though. Research indicates that our better-developed communicative skills allowed us to form groups of up to 150 individuals. The most important aspect of our communication, was that we were able to talk about others behind their backs effectively. Although seemingly trivial, this allowed us to form complex social relations, which helped the tribe understand the established hierarchy. As such, our governance was better than the governance in tribes of other cognitively developed human-like species.

As time progressed we became increasingly skilled in organizing ourselves. Throughout the cognitive revolution we learned to communicate about things that we had never seen, heard or smelled. As our language evolved, we gained the ability to communicate about myths in all shapes or forms. We started talking about our superstitions and, over time, a wide variety of religions emerged. Of course, these did not exist anywhere but in our minds. Just like our ideas of territorial ownership, they were solely social constructs. However, these early religions helped us to further develop an understanding about what is good and bad behavior - not just towards the gods but also towards each other. For example, killing a member of your own tribe near the river is bad and it might piss of a water spirit. As such, others in the tribe would punish you for it. This decision mechanism to punish a killer is an early form of governance based on natural law. The decision to punish was not made out of impulse or because the alpha male dictated it, but the killer violated a common understanding about how the community was to behave. As such, belief in a religious myth helped communities to govern itself more effectively – and grow as a result.

We fast forward through time, as religious myths kept forming the glue to allow us to function as a society for most of history. Over the span of history, our religious beliefs has allowed us to form increasingly complex legal systems based on natural law. These systems allowed us to form more stable societies and as law dictated what behavior was accepted, people could be appointed to enforce it. Just like religion and territorial beliefs, our notion of law is a social construct. It doesn’t exist anywhere but in our minds. Once again however, this social construct allowed us to better govern ourselves. It worked so well, that as civilization grew increasingly complex, we started codifying our legal beliefs, first in ancient Egypt and later in ancient Greece and the Roman Empire. Not coincidentally, this went hand in hand with the codification of organizational structures. Our governance became codified law.

Still, we did remain territorial. Territorial conquest and commonalities between local tribes led to increasingly bigger communities and finally even nation-states and empires, which were sustainable due to our newly found belief in codified governance. Although better organized, we would still focus on the same kind of territorial conquest that tribes had pursued. Complete empires emerged, with effective systems of delegation of power. Territorial beliefs gave people a common sense of union with other citizens of an empire. Today, we call such beliefs nationalism.

From the 16th century onwards, nationalism increasingly became a problem. By now, we realized that there was substantial money to be made in global trade, and we had started colonizing most of the known world to capitalize on it. However, colonial rebellions based on nationalist beliefs and complex diplomatic relations between colonizers made it increasingly difficult for states to trade effectively. Realizing these restraints on the nations’ trade, daring traders came up with a new form of governance to capitalize on the opportunity at hand. In 1602, Dutch East India Company was established. It marked the beginning of a new era of governance. In essence, we had managed to make up a new social construct to allow us to govern ourselves effectively: the publicly traded company.

This new construct, rooted in our system of codified legal beliefs, allowed us to imagine a new ‘entity’ that would exist separately from its earthly assets, owners and employees. Each of these could be replaced and the legal entity would continue existing. Like an imagined deity, concept of state, money or legal system, this entity exists in our minds only. In Sapiens, Yuval Noah Harari illustrates this beautifully:

*People easily understand that primitives cement their social order by believing in sorcerers, ghosts and spirits, and gathering each full moon to dance together around the campfire. What we fail to appreciate is that our modern institutions function on exactly the same basis. Modern Business-people and lawyers are, in fact, powerful sorcerers.[…] If a priest goes through all the required spells and oaths, exclaims ‘Hoc est corpus meum!’, then hocus popus - bread is turned into Christ’s flesh. In the same fashion, when a lawyer goes through all the required spells and oaths, using a nicely decorated piece of paper, affixing his ornate signature to a piece of paper, then hocus pocus, a company is created.*

Today, governance through the concept of big multinational companies has arguably become more powerful than territorial or religious governance. In fact, in the past 400 years, shareholder-value maximizing companies have led to more technological achievement and welfare than ever before. The revenue of the biggest corporations now dwarfs the GDP of most states. So how has this new kind of organization become so important?

Simply said, corporate governance unites people on the basis of one very strong common interest: making money. Ever since people in the developed world don’t have to focus on survival, they have focused on accruing as much money as possible. Money, together with status, is what drives us, and companies are effective because all stakeholders in a company are united by having a financial interest in the success of the company. Over time, we started figuring out the best way to be governed within a company, and so, the field of corporate governance emerged. This field is occupied with patterns of rule within businesses – with the systems, institutions and norms by which businesses are directed and controlled.

Now, a new form of governance is appearing. This new form of organizing ourselves has been made possible by a great human achievement: the creation of the internet. This worldwide communication system has led to radical changes in our daily lives. For the first time, people all around the world are able to communicate with each other instantly. This communication is allowing us to form new communities. These communities are not very different from early tribes, albeit they are not based on territorial beliefs or religious myths. Instead, they have organically emerged around shared commonalities and interests between people all over the world. On Reddit alone, you can find over 1.2 million of these communities. Community governance is implemented through voting systems and moderation, based on shared beliefs on the kind of content and behavior that is to be allowed in the subforum. Communities are increasingly distinctive from each other due to distinctive uses of language and memes that are specific to the forum. What’s more, we are even starting to see rivalries between these communities; a form of new-age tribalism.

One of the more important tribes was organized around an electronic mailing since the late 1980s. Going by the name of ‘cypherpunks’, a group of individuals with shared beliefs about the importance of cryptography and privacy-enhancing technologies continuously explored a number of technical, cryptographic concepts. Many of these concepts would later form the basis for a new myth to believe in. This myth would be the feasibility of an existence completely separate from today’s social constructs such as the state, banks and corporations. It was named Bitcoin.

Many rejected the idea instantly as a surreal daydream of magical internet money created out of thin air. However, Bitcoin kept being developed by a community of online developers with similar beliefs about the faults of our current monetary system and the ability of central banks - the most powerful corporations in the world - to print money on its own discretion. Their solution, an online currency with a fixed-supply, is extremely elegantly designed. Bitcoin’s community exists of users, investors, miners (the parties that make sure the system is safe), developers and nodes (the parties that basically keep miners in check). None of these parties actually have to know each other to add value to the community. Instead, they only have to believe in the newly found social construct called Bitcoin, and its underlying code.

Bitcoin’s governance resembles the governance of governmental systems. In a blogpost, titled ‘Blockchain Governance: Programming Our Future’, Fred Ehrsam illustrates this beautifully:

*“Similar to the Senate submitting new bills, developers submit pull requests. Similar to the judiciary, miners decide whether or not to actually adopt the laws in practice. Similar to the executive branch, the nodes of the network can veto by not running a version which aligns with what the miners are running. And similar to citizens, the users can revolt. Finally, economic incentives dictate that it is in everyone’s best interest to maintain trust in the system. For example: if miners alienated all the users, the tokens would decrease in value and they would go out of business. “*

Bitcoin has shown that governance through code, combined with a religious belief in a common interest, seems to be a viable way for humans to organize themselves. Bitcoins, and other cryptographic tokens, create network effects and align interests between stakeholders within the ecosystem. Everyone who owns bitcoin has an incentive to contribute value to the project, by for example, preaching its benefits to the outside world.

Additional financial incentives can be encoded in a currency’s codebase to encourage specific behavior. For example, projects like Golem and Filecoin award people for renting out their computer’s storage capacity. By effective application of game theory and, more specifically, mechanism design, such financial incentives can be further fine-tuned. Meanwhile, reliable voting mechanisms can be implemented using blockchains, by having cryptocurrency holders ‘stake’ their tokens in order to signal their vote about specific topics. Implementations hereof are found in the governance of projects like Decred and Augur. In Decred, this voting mechanism is pretty straight-forward. Augur on the other hand is a prediction market which allows people to stake money on expected outcomes of events. If you are right, you are rewarded in tokens and if you’re wrong you are punished, which essentially creates a market for the predictions on the future.

This has all led to a renewed interest in how we can effectively govern ourselves in a digital age. Increasingly, forms of governance such as liquid democracy, quadratic voting, futarchy and meritocracy are re-examined. At the same time, a new kind of organization is emerging: the decentralized autonomous organization, or DAO. It is an organization that is run through the rules encoded as computer programs called smart contracts. The first, and most well-known DAO was, not coincidentally called The DAO. It was coded to function as an investment fund, which allowed all who bought its tokens to vote on how the funds should invest its money. As most are aware, The DAO was a gigantic failure. It had loopholes in its code, which resulted in it being hacked almost immediately. Sadly, this has had a significant negative impact in the online blockchain communities’ interest in DAOs.

So, what’s the point of this article?

Only by understanding that effective governance has historically been the most important factor of human survival, evolution and progress, we can appreciate the opportunities that are found in the concept of governance through code. Only by understanding our history we can understand its significance for our future. Realizing all this, it is essential that we keep experimenting with code-based governance. This is exactly the reason why I applaud Aragon, a project that is building the infrastructure to support these experiments. Aragon’s platform allows for governance applications to be built and shared between organizations, and experimental forms of governance to be tested and gradually implemented to ensure safety. The aim is for new kinds of organizations to exist outside of the conventional, territorial, legal systems of today. To make this possible, the project is even building its own digital jurisdiction, complete with a decentralized arbitration system. In case of a dispute about the (mal)functioning of a DAO’s code, a number of jurors will be randomly chosen to vote on how the dispute should be resolved. They are incentivized to act in an honest and rational manner: if their vote coincides with the vote of the majority of jurors, they are rewarded in; if not, they are punished.

It is time for us to accept that, when we talk about blockchain-based projects,we are not just talking about magical internet money anymore. We are talking about the start of the greatest evolution in human governance since the invention of the company.