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"An Investigation Into The Societal Use of Blockchain Based

I-Voting in Democratic Government"
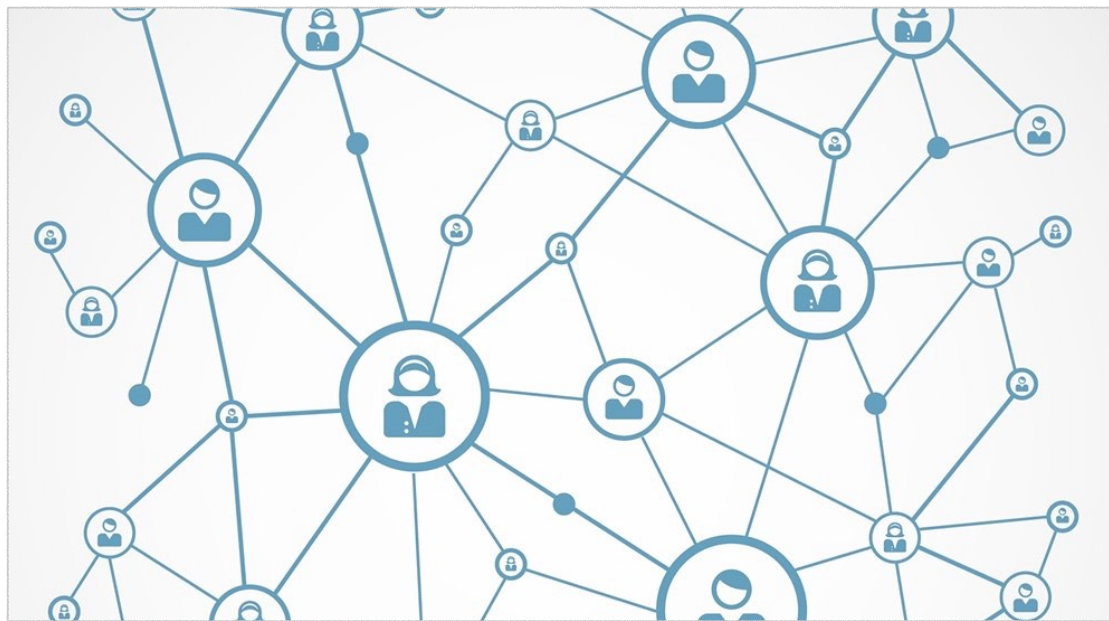
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Abstract

The purpose of this thesis is to answer my main research question: *"What is the societal use of blockchain based I-voting in democratic government?"* I answer this question by conducting an extensive research on the relationship between blockchain technology, institutional theory and organisational theory literature. Even though there has been a great influx in academic research on blockchain over the past years, a comprehensive analysis on the subject has been lacking to date.

According to this thesis, there is a lack of knowledge in the existing academic literature to answer its main research question fully. Taking inspiration from the literary works of Stake (1995) and Merriam (1998), I have carried out a case study on the Australian political organisation Flux. Data from the case study is collected with the use of semi-structured interviews and has been analysed from an institutional work perspective. In order to gather valid, usable and unbiased data from our case study, I used the subquestions: (1) *"Why is Flux changing democratic government? "* and (2) *"How is Flux changing democratic government?"* We will not dive into the topic of how the implementations of blockchain technology changes power relations in society, to keep the scope of research as focussed as the topic allows.

The conclusion of this study is that the societal use of blockchain based I-voting in democratic government, is to provide a foundation for democratic governance to update and improve itself at its core of its organisation. By reducing the operational costs of running a government, increasing levels of societal trust in government by offering higher levels of transparency, and creating a platform on which more organisational improvements for democratic government can be built. Therefore, blockchain based I-voting is likely to have a positive effect on the relationship between society and its government.

Keywords: Blockchain Technology, Democratic government, Organisational theory, Institutional work, Public choice, Decentralisation, Trust

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Introduction

Every few decades, a technology comes along that can change the way our entire society functions due to its impact on existing economic en social structures. These technologies are called General Purpose Technologies (GPT's). Examples of such technologies range from the steam engine and real roads, to mechanisation and the invention the internet. In 2008, a technology called "blockchain" - which is *the underlying technology of Bitcoin and Ethereum* - came along that is defined as a GPT in its early stages (Kane, 2017). Researchers in the field have established that even though this new GPT will have a major influence on economic productivity in society, blockchain should be analysed from an institutional theory perspective, due to its core function of changing the technology of economic coordination and governance (Davidson, De Filippi and Potts, 2016).

Even though there has been a great influx in academic research on blockchain since the concept was born in 2008, According to Atzori (2015), a thorough comprehensive analysis on the impact of blockchain technology on governance and democracy has been severely lacking to date. The purpose of this thesis is to answer its research question, in combination with revealing new insights in the field of blockchain based democratic governance. The relevance of this research is immediately found in the lack of existing academic literature on the subject.

Blockchain-based democratic governance holds significant economical, technical and managerial advantages for markets, private services and communities. In this project, I will analyse the potential uses of blockchain technology in democratic governance, from an institutional and organisational theory perspective. Therefore my main research questions will be: ***"What is the societal use of blockchain based I-voting in democratic government?"*** Through providing an answer to this question, this thesis will improve upon the existing academic literature, while providing a stepping stone for further research on the subject.

According to a managing principle known as Joy's law, democratic governments have historically made ineffective use of its resources. This principle is based on the idea that no matter what organisation you are, even if you have the most educated people working for you, more knowledge can be found outside the confinements of your company, then within it (Park, 2015). This ideology comes from a Japanese proverb, which can be translated to: "None of us are smarter then all of us." Through the development of blockchain technology, it has been made possible to tap into the knowledge of entire societies in a safe and manageable way. Allowing democratic government to flourish with the help from a digital consensus based open innovation system, which effectively manages the resources of society.

Democratic governments have been one of the few organisations where pressure by market mechanisms to continuously redefine its relationship with society has been insufficient, due to its monopolistic power position. According to IBM (2017), nine out of ten western governments will have invested in the use of blockchain technology by the year 2018. The reason for this being that in the near future blockchain technology is likely to have a profoundly positive effect on diminishing organisational costs of governing society by overcoming bureaucratic barriers, and by reinventing the relationship between civil society and democratic government. This organisational innovation is about to change the way we interact with democratic government, and the manner in which democratic government generates policy and compliance with its rulesets in a profound manner (Boucher, 2017 ; IBM, 2016 ; Tapscott and Tapscott, 2016).

This thesis is organised as follows. The first part of this thesis will provide background information on the empirical characteristics and applications of blockchain technology by examining past, current and future developments by looking at the three phases of blockchain implementation in society provided by Swan (2015), before delimiting this research in chapter 1. Secondly, this thesis will present the literary review which has been divided into the institutional level in chapter 2, and the organisational level in chapter 3. The 4th chapter consists of a methodology section, which presents my theoretical and practical foundation approach to carrying out this research, followed by the limitations of this method. Chapter 5 will provide an introduction to the institutional context of Australia that is relevant to the case of Flux, and in chapter 6, I will present the case analysis. Chapter 7 supplies a section with the areas of this research that are up for discussion, and the final component of this thesis, chapter 8, provides a conclusion to my research and introduces potential areas of further research.

Blockchain technology will become an essential part our banking systems, our economic markets and our government within the following decade. It is essential for this project to seek an objective analysis of its topics, neither leaning towards social determinism, nor towards a technical deterministic standpoint. Careful evaluation of new models of governance is fundamental in the generation of democratic governmental systems, biased towards the creation of good policy.

We have now introduced you to the topic of this thesis and how this thesis will unfold in the upcoming chapters. The following chapter will provide us with the necessary background information on blockchain technology and its relationship with democracy and governance. This background information is necessary to provide the reader with an improved understanding why there is an important connection between blockchain technology, the institutional-, and organisational-layers of government, which will be discussed in detail in chapter 2 and 3.

1   Background For Blockchain Technology

This first chapter will dive into the specifics of what a blockchain is, and focus on its relationship with governance and democracy. I will refrain from diving into the technical aspects of utilising blockchain technology, since it is not necessary for the purpose of this thesis. The motivation for this chapter is to supply the reader with a basic understanding of blockchain technology, and to give an introduction to its relationship with organisational- and institutional-theory. Achieving a higher level of understanding in blockchain technology will be of help in answering our main research question. This thesis will focus on the characteristics and functionalities of this new technology and its effects on our socio-economical institutions.

1.1   What Is a Blockchain?

Blockchain technology, also known as cryptographically secured distributed ledger technology, has had its birth in a 2008 white paper published under the pseudonym Satoshi Nakamoto (Nakamoto, 2008). While the majority of the media's attention was focussed on the infrastructure of a cryptocurrency named Bitcoin, a Peer-to-Peer Electronic Cash System, the significance and value of the underlying technology of Bitcoin would soon prove to exceed its disruptive potential in terms of possible innovative applications. The reason for blockchain technology coming into existence in 2008, was because of the worldwide frustration with the banking system after the financial crisis. Until the invention of distributed ledger technology, when carrying out digital transactions one always had to make use of a bank as an intermediary because of the double-spending problem. The double-spending problem was an issue in the digital currency model where a currency could be spent twice, if the digital money wouldn't travel through an intermediary central hub to control whether the transaction was valid.

A distributed ledger is a database that is consensually shared and synchronised across a network of multiple databases. The difference is that the technology on which Bitcoin is built, is a cryptographically secured kind of distributed ledger technology (DLT), also known as - *Blockchain Technology*.

Ledgers are a technology commonly used as an accounting tool for banks to maintain databases of account transactions, and for governments to maintain records of land ownership necessary to our modern day capitalism. The technology dates back as far as the banking system of the Roman empire, and the it has not undergone any major innovations since double entry bookkeeping was first used in the 15th century. Ledgers have been digitised in the late twentieth century, but until the birth of the blockchain this technology has always existed in its original centralised form (Lauwers and Willekens, 1994).

Blockchain offers the same record keeping functionality of traditional ledgers, but without the use of a centralised framework. Instead of having a centralised authoritative entity that legitimises transactions, each user, also known as **node**, holds a copy of the database. Each new transaction is packed together with other new transactions into a **block** of information. This block is then added (in a chronological manner) as the last link on a **chain** of previous blocks, thus forming a "Blockchain". These blocks hold data to verify the entire history of activity of that particular blockchain. In the case that someone wants to add new data to the blockchain by either making a currency transaction or casting a vote on an issue, **consensus** needs to be achieved on whether this is possible. When transferring cryptocurrency from one account to another, processing power of computers connected to the network is used to validate whether you actually have enough cryptocurrency in your digital **wallet**. When this is the case, your transaction will be added to the next block, thus being permanently stored on the blockchain. For the purpose of casting a vote on an issue, whether being a vote in a board meeting of your organisation or your vote on the creation of an institutional policy issue, the network needs to verify whether you are allowed suffrage. Achieving consensus and approving on such a transaction by the network of connected nodes, is called **mining** (Boucher, 2017). When the transaction is validated and consensus is achieved, the transaction will become part of the new block that is formed. This block will be formed, encrypted and linked to the previous block. This validation process can either be done through a Proof of Work PoW model, or a Proof of Stake (PoS) Model. For the purpose of this project, the difference between the two validation models is not important, but the main purpose of mining is to verify the legitimacy of a transaction and avoiding issues of digital currencies, where information asymmetry on the whereabouts of funds can lead to someone spending the same money twice, also known as the "double-spending problem" (Tapscott and Tapscott, 2016).

All users of the network can be miners in the system. The first miner that analyses the validity of all transactions in the block and solves a mathematical problem, gets compensated for addressing its computational power help the network. In case that one of the transactions within a block proofs to be invalid, the transaction is rejected. How often a block is created and the size of that block depends completely on the rules set by the users of the blockchain, but in general a block is created every few minutes and holds thousands of transactions (Tapscott and Tapscott, 2016). Through this method of verification, achieving consensus is done automatically on behalf of each user, resulting in a ledger that is digitised, tamper-proof and decentralised (Hancock and Vaizey, 2016).

The main reason a blockchain is tamper proof is because of its decentralised nature. Before the invention of the blockchain, when trying to alter or erase data on a traditional ledger one must attack the middleman. When attempting to alter data on a blockchain, one must change all the data

from every user of the network simultaneously. Due to the increasing size of blockchains and the amount if nodes connected to the network, nobody has been able to succeed in tampering with blockchain based decentralised ledger (Tapscott and Tapscott, 2016).

In regards to the ability to connect to a blockchain, this technology can be set up in two different way; either as an open (permission less) blockchain, or a closed (permissioned) blockchain. The difference between the two is that for a closed blockchain you need permission to join this private network with a **shared** network of transaction. Furthermore, you need permission to monitor activity or to add transactions to the ledger, while for an open blockchain there is a **public** network that maintains an immutable record of transactions, anyone can publish a transaction and participate in the network as long as they comply with a predetermined set of rules. For example, Bitcoin is a permission less blockchain where anyone can join the network and start participating anonymously, while a blockchain based digital voting system makes use of a permissioned system where participants are validated before they can participate in building consensus.

Due to the revolutionary characteristics of this new technology, blockchain has the potential to safely and transparently innovate professional fields ranging from banking and law, to patens and governance (Tapscott and Tapscott, 2016). Even though blockchain is still an emerging technology, according to recent studies it shares enough distinct characteristics to be labeled a *general purpose technology*. This means it has the potential to drastically alter society on a global scale through its impact on pre-existing economical and societal structures, classifying blockchain technology as being on a similar track as electricity, computers, the internet and smart phones (Kane, 2017 ; Wright and De Filippi, 2015).

There are three different categories of general purpose technologies; (1) products, (2) processes and (3) organisational (Lipsey, Carlaw and Bekar, 2005). Instead of looking at the surface appeal of blockchain technology and categorising it as a data communication technology, we will be focussing on the underlying form as analysed by Davidson, De Filippi and Potts (2016) and categorise blockchain as a technical improvement tool for restructuring and the creation of new forms of organisations (Kane, 2017). This classifies blockchain technology into the same group as the assembly line production of Henry Ford (Jovanovic and Rousseau, 2005).

1.1.1 Computing Paradigms: The Connected World and Blockchain

In order to understand properly how blockchain should be perceived in relation to other technologies that we use on a daily basis, it is useful to put it into perspective with other computing paradigms of the past decades.
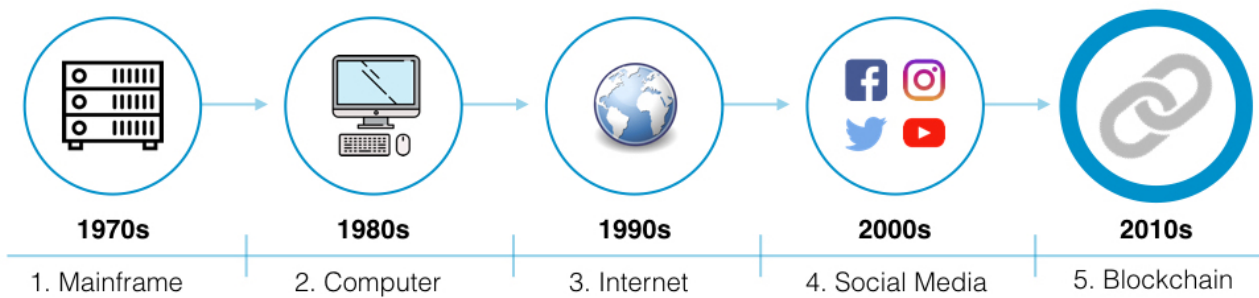
Figure 1: Computing Paradigms From 1970s until 2010s (Swan, 2015)

Computing paradigms are a model through which we can understand our modern world and the digital innovations that have shaped our societies over the past decennia (Swan, 2015). The transformation from the mainframe and computer to the internet changed the way majority of our society operates. Digital interconnectivity between hardware became the first time humanity was able to digitally transfer data, but there was still a problem with the internet of information. When sending data (e.g., an e-mail) to someone else over the internet, it is not the actual file being sent but a copy of the file. This made it impossible, without establishing trust through the use of intermediaries, to transfer something of value (e.g., money, music, other financial assets) and still be positive that the sender didn't maintain the asset.[1] By cryptographers, this issue was also known as "The Double Spending Problem" (Tapscott and Tapscott, 2016).

Through the use of blockchain, safely transferring valuable assets without the use of intermediaries suddenly became possible. By removing intermediaries from the economic system, blockchain has made it possible to remove problematic intermediaries while creating a more foolproof way of providing trust within our socio-economical systems. When implementing this technology, there is no need for trusting other parties anymore, since trust is imbedded in the system (Economist, 2015). Through this technology, it has become possible for governments to change the manner in which they manage currencies, supply chains, digital content, Internet voting (I-voting), patents, smart contracts and the relationship between a state and its citizens (Boucher, 2017).

Now that the origin of blockchain technology has been properly introduced, the upcoming chapter will continue by taking a look at the current uses of blockchain technology and through which phases this technology is going to be adopted in society. The purpose for creating this sub-chapter is to provide a better understanding of why the implementation of blockchain technology in democratic governance is only in its beginning phases.

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[1] In other words, when person A digitally sent twenty Euro's to person B, it was impossible to do so securely without the use of an intermediary (e.g., a bank).

1.2 The Current Developments of Blockchain

This chapter will provide an overview of the most thriving present-day innovations using blockchain technology from the moment it spawned in 2008, and will provide a foundation for the next chapter which will focus on the future of blockchain. To maintain an organised and agreeable structure development, we will make use of a framework on blockchain innovation phases created by Swan (2015), in which she has broken down the applications of blockchain technology into three phases of implementation; cryptocurrencies, smart contract and blockchain applications beyond economics, currencies and markets.

1.2.1 Blockchain 1.0: Cryptocurrency

According to Swan (2015), there are three different phases in the evolution of blockchain technology. Blockchain 1.0 is focussed on using distributed ledger technology for the transaction of value, instead of using intermediaries. This phase was initiated at the moment bitcoin, was first created in the beginning of 2009 (HistoryofBitcoin, 2017).

This phase of blockchain is centered around the decentralisation of financial markets, money and payments. The reason why the financial systems are the first phase of blockchain implementation in society, is because (1) the problem of trust has been high in the financial system since the last economic crisis and (2) because the white papers in which blockchain technology was first created to improve upon the financial system with the use of crypto-currencies (Nakamoto, 2008).

To establish trust in our economy, we currently rely on banks and governments as intermediaries to provide us with the the reliable authentication and identification of people, while clearing, setting and keeping records of our transactions. These institutions have shown to have certain fallacies within their design, making them far less then optimal. (1) Banks are centralised, making them far more hackable then network based solutions, thus creating (2) privacy issues, (3) they exclude poor people from the economy without the financial means to obtain a bank account, (4) transactions between parties are unnecessarily slow, and most importantly, this system is creating a concentration of power and financial wealth, leading to a steady increase in social inequality since the 1970's (Creutz, 2008 ; Tapscott and Tapscott, 2016).

From a purely economic perspective, using blockchain based systems to carry out payments would be beneficial, since it demands a much lower transaction fee than current alternatives offered by the financial system.[2] Furthermore, unlike waiting for multiple days to transfer money between

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[2] When transferring more then an equivalent value of $10 on the Ethereum blockchain, the transaction fee will be under 0.1%, while sending the same amount on the Bitcoin blockchain, the the transaction fee will be under 14.4%.

different currencies or even different banks, cryptocurrency transfers are instant. Lastly, from a social point of view, people who don't posses the monetary means to create an account with a bank can create their own digital wallets, since there is no minimum amount of currency needed to join the network. According to Antonopoulos (2014), this decentralised provider of trust represents a shift from trusting people, to trusting computation.

1.2.2   Blockchain 2.0: Smart Contracts

According to Swan (2015), the second phase of blockchain implementation in society called Blockchain 2.0, is characterised by decentralising markets outside of the financial market, and the use of smart contracts.

Smart contracts are autonomous self executing computer protocols created to validate, execute and enforce the terms and conditions of of a contractual arrangement (Atzori, 2015). The reason that this functionality could initiate such an influential change in society, is because it removes the need for intermediaries to cary out the accompanying tasks of contract management. When working with smart contracts, both parties sign an agreement in digital form, which is autonomously executed and enforced when its terms are met. As the development of the internet allowed for online companies to exists on top of the protocol stack of the web, it continuously searched for new ways to benefit from the underlying infrastructure of the internet (Gord, 2017). Since there is such a vast amount of implementation possibilities regarding the use of smart contracts, ranging from transparent charities where you can follow where your donations are being used for, too digitally buying a house without the need for lawyers.

The largest blockchain making use of smart contracts is called Ethereum. This blockchain is used as a distributed ledger to store financial transactions, but through smart contracts also acts as the underlying technology to provide a foundation for: Distributed Autonomous organisations (DOAs), Decentralised Applications (Dapps) and Decentralised Autonomous Corporations (DACs) (Swan, 2015 ; Tapscott and Tapscott, 2016). For the purpose of this thesis, we will only be looking at blockchains which are currently making use of smart contracts, since this is the foundation on which its applications beyond currency are built.

1.3   Blockchain Future Developments

This chapter will be focussed on what Swan (2015) has defined as blockchain 3.0; meaning blockchain applications beyond currency, finance and markets, particularly in areas of health, science, literacy, culture, art, and **governance.** This information is relevant toy research, because the relationship between blockchain technology and democratic governance will be the

cornerstone of this thesis. Blockchain 3.0 is defined as the last phase of blockchain implementation in society. This will be the last part of the introduction dedicated to blockchain technology, and the concluding chapter of this introduction will provide a section on the delimitations of this research.

1.3.1 Blockchain 3.0: Efficiency and Coordination Beyond Currency, Economics and Markets

A significant development of blockchain phase 3.0 is the concept of blockchain based governance to provide services conventionally provided by government, but in a decentralised, more efficient, cheaper and more personalised manner. Blockchain technology can be used as a tool for digitally keeping record of society's documentation of the past, and for governing the present (Swan, 2015). Due to there being a large amount of applications for blockchain in governance, ranging from decentralised government services to a complete government on the blockchain, for the purpose of this thesis we will be narrowing down the scope to blockchain based I-voting. This topic is chosen since it is believed that this platform will provide the understructure on which democratic government can reinvent its relationship with civil society.

We should point out that blockchain technology is still in its defining phase, establishing itself in an extremely fast-moving field where scholarly literature is still scarce. The majority of the debate on blockchain technology has been in relation to Bitcoin. While there is s a possibility that the cryptocurrency bitcoin would stop existing in the future, the underlying technology is far more unlikely to discontinue due to its trajectory of growth in society (Boucher, 2017). Before we can start with the literary review, chapter 1.4 will provide a section in which I will provide the delimitations of this of this thesis.

1.4   Delimitations

I will now discuss the characteristics that limit the scope and define the conceptual boundaries of my research. The purpose of this section is to highlight why previously mentioned issues related to the topic will not addressed.

For the delimitation of this thesis, I have followed the view of merriam (1998) who states that: *"the case as a thing, a single entity, a unit around which there are boundaries."* These boundaries are created by the choices I have made during the execution of this research. Although there is a large range of factors to be understood in regards to the societal use of blockchain based I-voting on democratic governance, this study will focus on relationship between the institutional- and the organisational-level.

The choice of not going into the Shumpetarian perspective of blockchain technology, and instead focussing on the institutional and the organisational level has created boundaries in terms the topics I was able to include. The concepts of; "how the implementation of blockchain technology in democratic government" will decentralise power structures within society. This would have resulted in an interesting topic in a research area that is in need of more scholarly literature. The issue being that focussing on this many different areas would have lead to the creation of a disjointed and unstructured thesis, because of the difficulty of narrowing down al this data into one coherent project. These aspects will be further discussed in the final chapter of this research, which provides possibilities for further research.

I have chosen not to involve the "improvement of public services and identity management into this thesis. These are aspects that will be a big part of improving the relationship between blockchain technology and democratic governance, but they are not relevant enough to the main research question of this thesis to be discussed in the literary review. Now that the delimitations of this research has been provided, chapter 2 is going to contribute to this thesis by reviewing the institutional framework.

2   The Institutional Framework

This chapter will review the broader institutional framework, providing clarity for the second part of the literary review, which focusses on the organisational framework relevant to my research question in chapter 3. I have chosen to guide the reader through my thesis, by following a structure of research in which we make use of an hourglass approach (Schulte, 2003). This research approach starts with introducing the broader literature for support, where the author leads the reader to narrower objectives or hypotheses (Schulte, 2003). In the same manner, this thesis will start of with a broader lens of the institutional framework in which our case is operating in. This is to provide a scope on the framework surrounding our main research question;   *"What is the societal use of blockchain based I-voting in democratic government?"*

The function of this chapter is to review the institutional framework relevant to my main research question. We will be looking at the relationship between blockchain technology and democratic government from two different levels; starting at the the institutional level in this chapter, and going down to the organisational level in the next chapter. This research focus is justified by recent academic literature on blockchain technology in the following subchapter 2.0.1.

2.0.1   Research Focus Justification

This subchapter will justify the research focus of this thesis. I have considered the economical-, organisational- and institutional-lens as a framework to look at my main question, and backed up my choice of research focus with academic articles on the topic with this review. The purpose of this justification of research focus is to establish the need for extra investigation in this field of research. After this subchapter, there will be a short introduction to the institutional framework of flux, before starting with the actual review.

When looking at blockchain technology from an economical lens, innovation through technological change is modelled as a positive shift in production expressed in total factor productivity (TFP). Looking at the technological change that has been initiated by blockchain technology from a neo-classical Schumpeterian lens of ICT productivity, will put a focus on its advantages in comparison to current operations in terms of efficiency of economic operations. People invest in a new technology because of its marginal productivity gains. Since the effects of blockchain in society are likely to be much more profound than just economical, this narrow Schumpeterian point of view does not do the latest general purpose technology justice (Tapscott and Tapscott, 2016). Due to its general purpose technology characteristics, blockchain will change more then only the economic productivity of an industry. Blockchain is a new tool for economic coordination that is likely to lay the foundation for new systems of governance (Boucher, 2017 ; IBM, 2017).

When looking at the relationship between blockchain technology and democratic governance from the frame of reference of Atzori (2017), it is discussed whether this new technology should be analysed from a political theory or an organisational theory standpoint. Blockchain based governance is a disruptive technology with tremendous transformative potential for our societies which can benefit any organisation, and especially government. Atzori concludes with the comment that even though blockchain hold tremendous potential for improving the political sector; "Blockchain-based governance should be seen as an organisational theory – with significant technical and managerial advantages for markets, private services, communities – while it is not meant to be a stand-alone political theory" (Atzori, 2017).

North (1990) states that institutions include any form of formal and informal constraints that human beings fabricate to shape and bound human interactions. The role of institutions in society is to reduce uncertainty by establishing a stable structure to human interaction. Institutions, together with the standard constraints of economic theory, determine the opportunities in society. Organisations are created to take advantage of those opportunities. As organisations evolve, they alter the institutions. When putting this into the perspective of this project, when governments evolve, they alter democracy. Organisations would perform better if they adopt rules with property rights, as well as enhance private incentives with regard to activities with high positive externalities.

There is consensus in the field from researchers such as Davidson, Filippi and Potts, Atzori and Swan that there is still very little information available regarding the societal use of blockchain based I-voting in democratic government, and how it influences government on an organisational- and institutional-level. Academics in the field of blockchain based governance have suggested further research in the field of efficient institutions, distributed knowledge, commons governance and the improvement of democracy (Davidson, Filippi and Potts, 2016 ; Merkle, 2016 ; Swan 2015). This thesis will look at how the use of blockchain technology on the organisational level of democratic government, will bring about change in the institutional level. The following subchapter will start of by reviewing literature on the relationship between blockchain technology and democratic governance on an institutional level.

2.1   Blockchain Technology & Democratic Governance - The Institutional Level

This subchapter will review existing academic work on the relationship between blockchain technology and democratic governance on in institutional level. The purpose of this subchapter is to provide the reader with a short introduction on the topic to create an improved understanding of this relationship. In the next subchapter, I will discuss the institutional foundations of democratic government, divided into parliamentary-, presidential- and the specific case of the Australian parliamentary-democracy.

When following the viewpoint of Ostrom (1990), polycentric institutions of governance beyond markets and states such as commons can help the gathering of economic knowledge. Evidence has been provided by Ostrom (1990) in past research that the commons works at a small scale to provide private governance, as long as there exists an effective feedback loop. Through the use of blockchain technology to provide information, monitor participants and enforce rules, effective feedback loops on a much larger scale can be manageable. Problems that previously existed within the Ostrom model such as the scalability, the free rider problem and the tragedy of commons can be addressed by the transparent distributed nature of blockchain technology.

According to Osborne and Gaebler (1992), governments should be focused on "*steering*" society into the right direction by putting together the right incentive schemes, rather than "*rowing*" to keep us moving forward. They push the idea of a government setting priorities and goals, instead of being the direct supplier of services. In the past, endeavours following this ideology have uncovered the need for innovative solutions to the mismanagement of state and bureaucracy, on the other hand, they have resulted uncontroversial and socially costly attempts to improve efficiency. These obstacles can be overcome by making use of an updated technology that has transparency as one of its main characteristics.

The view of Potts (2015) is that Blockchain technology provides a tool for communities to reach consensus on a larger scale than which was previously possible. This makes it feasible to apply innovative bodies of self-governance. Being able to record every interaction on an distributed transparent ledger, where trustworthiness is embedded into the code, together with the possibility to automate a specific set of rules that link these interactions with incorruptible transactions, creates the possibility to model advanced incentive systems unlike any conventional marked based systems. This makes blockchain technologies, social technologies for whole new institutional forms of economies. Evolving organisations innovate the institutional framework they are working in, in the same way that an evolving government will innovate democracy into a structure which is more in tune with the technological age society is in (Potts, 2015).

According to Hodgson (2006), institutions are the most important structures in the local realm, due to an increasing acknowledgement that a majority of human interaction is structured by formal and informal structures of society. Institutions can be defined as systems of established and prevalent social rules that structure social interactions. Another aspect of democracy to keep in mind, is that democracy is problematic, because of its reliance on basic pragmatism. The view of Cunningham (2010) is that; *"Human affairs are best seen problem-solving processes which are unending, because every solution creates its own problem. This is no less true of politics then in science,*

education, art, and the interactions of everyday life." Form a pragmatic perspective, this means that the better a solutions is, the longer it takes before it becomes a problem and another solution has to be implemented (Cunningham, 2010).

After having provided the research justification, I will now provide a literary review, where the relevant broader institutional concepts will be discussed in regards to the institutional foundations of democratic government. I will provide the reader with a broader view to properly understand the difference between the electoral systems and democratic government systems most commonly used in the western world in chapter 2.2.

2.2   Institutional Foundations of Democratic Government

In this chapter, this thesis will present the institutional foundations of democratic government that are most relevant to my research; *the parliamentary* and *presidential system*. According to Moe and Caldwell (1994), when comparing the two systems, it is useful to keep things simple by focussing on the classic westminster system. This is in order to create a lead-up to our next chapter, which will present the systems of democratic government most relevant to our research: *representative democracy, direct democracy* and *liquid democracy.*

2.2.1   Presidential and Parliamentary Democracy

This chapter will be explaining the parliamentary- and presidential-system of democracy, to the depth that is necessary for this thesis. In the presidential system, the leader is called the president. The primary difference between a parliamentary and a presidential democracy, is that in a presidential system the leader (I.e. president) and the legislature are separated, while in a parliamentary democracy, the leader (I.e. prime minister) is part of the legislature. The presidential system is less common then the parliamentary model, and is usually modelled by using the United Stated as an example. The parliamentary model is the most common model of democratic government in the world, which is most often modelled after the United Kingdom. The government in a parliamentary system is structured in a manner where the executive and the legislative branches of government are combined, while the government in a presidential system is structured so that the executive and the legislative branches of government are separated. In terms of the elections, in a parliamentary democracy the electorate votes for the representatives, which will in turn elect the leader of the government, while in a presidential democracy the electorate votes for a leader directly.

As stated by Moe and Caldwell (1994), whether being a presidential- or parliamentary-democracy, a central theme for both institutional forms of democracy is the way that its authority is divided and checked through the creation of numerous layers of bureaucracy to protect political interests. Bureaucracy ensures durability, creates solutions to issues of commitment and is an interesting tactic in the politics of structure. Resulting in a presidential government surrounded by bureaucracy, prevented from effective performance to create meaningful democratic control. Parliamentary models of democracy have less of these issues, because formalisation is not incentivised within this system.

In a parliamentary system, two or more parties compete in the electorate and the group gaining a majority in parliament forms a government. Due to making use of cohesive voting on the creation of policy, the governing majority party is at power to pass its own political programme whenever it wants. On the other hand, when the minority party becomes the majority, the new governing party has the ability to change or destroy all policies created by the formerly ruling party.

According to Gerring, Thacker and Moreno (2008), there is a strong relationship between parliamentary democracy and good governance. Especially in the policy areas of economic and human development, there is a powerful connection indicating that parliamentary systems may offer advantages over presidential systems of democratic rule. This research suggests that institutions influence the quality of governance.

Considering the view of Laski (1944), who establishes the argument that any comparison between parliamentary and presidential systems is likely to be more intricate than Price (1943) is making it look in his paper. According to Laski, there is no system better then the other, nor is their a system that is better suited for a highly intelligent electorate. For both systems, democracy will lose its meaning when citizens no longer believe that they can make a positive change in raising standard of living. Now that I have provided the reader with a basic understanding of what a parliamentary- and presidential democracy are, we can continue by going to chapter 2.3, which will review systems of democratic government.

2.3   Systems of Democratic Government

This part of the thesis will discuss the literature on the systems of democratic government most relevant to the main topic; *"the societal use of blockchain based I-voting in democratic government."* This will be carried out by providing academic theory on *representative democracy, direct democracy* and *liquid democracy*. The reason for this chapter is to explain the electoral systems most commonly used in western society. This will provide an understanding of the institutional framework my organisation is working in. Providing theory on current systems of democratic government also provides the reader with a more thorough comprehension on the foundation on which the electoral system which was designed by Flux was based on. In the next chapter, this thesis will present the case of our organisation and describe the institutional setup that best categorises the Australian case of Flux.

2.3.1   Representative Democracy

I will begin this subchapter by explaining the method of democratic government that is used most in present-day western society; "representative democracy", and how this system of democracy functions. Afterwards, this thesis will provide the electoral systems most relevant to our topic, which are *(1) plurality and (2) proportional representation*. We will only explain these systems to the depth necessary for the purpose of this thesis, but first this chapter will start of by defining representative democracy.

According to Dahl (2000), in representative democracy, instead of the electorate voting directly in favour or against the creation of certain policies, the electorate votes on candidates who will represent, and pass laws for them. The reason for making use of of a representative democracy instead of letting the electorate vote directly on political matters, is because having a direct democracy is time consuming and most voters can not, or don not want to free time to inform themselves regarding all political issues. For a representative democracy to work effectively it needs to have a genuine competition in the selection of leadership, there has to be freedom of speech for both the people and the media, and the electorate has to believe in the available choice of representatives and the differences in policy each candidate reflects. Before reviewing literature on direct democracy, I will present the two most used electoral systems of the democratic world.

2.3.1.1 Plurality

The plurality system is a method of consensus democracy, which is a perfect reflexion of the majoritarian philosophy. One party receives a majority of votes during an election and can implement policy for the rest of its ruling period. Advantages of this system are that it is easy to understand, it provides quick decision making and operation costs are cheaper than other methods. On the other hand, disadvantages of the plurality system are that in a closely contested

election with 5 candidates, one could win the election with only twenty percent of the total votes plus one. Because of this mechanism, the plurality method operates best under a two party system such as exits in the parliamentary democracy of the Unites States (Lijphart, 2012). According to Lijphart and Grofman (1984), plurality rule is far more likely to produce firm government than proportional representation. By discriminating against smaller parties, plurality normally leads to a two-party system, making stable one party government possible.

2.3.1.2 Proportional Representation

In an electoral system where there is proportional voting, the seats of parliament are proportionally filled in accordance with the amount of votes are received by the electorate per contestant. The idea behind having proportional representation in the electorate system is to prevent from certain parties being overrepresented, thus providing proportional levels of representation to both majority and minority groups. This means that votes from the electorate are corresponding with the amount of seats a party receives in parliament (Lijphart, 2012).

2.3.2 Direct Democracy

The purpose of this chapter is to explain what a direct democracy is according to existing academic literature, what the advantages and what the disadvantages are. This will, together with the previous subchapter on representative democracy, provide the build-up for the next chapter which dives into the topic of liquid democracy; a delegative system of democratic government which uses both direct and representative democracy.

Direct democracy is a system of democratic government where the electorate votes directly on the creation of policy. It has been argued that direct democracy is more democratic than representative democracy, because of its directness and the extent of influence on decision making of the people (Holden, 1974). Democracy can become more effective through the direct participation of citizens in the decision making process (Atzori, 2015). Direct democracy is believed (1) to lead to a higher responsiveness of the political authorities to the demands of the citizens leading towards an improved alignment between the view of civil society and the creation of policy; (2) to lead to higher levels of political involvement among civil society; (3) to promote transparency and a deeper understanding of politics. The basic democratic principle where political decisions should reflect the demands of citizens, is called the strong principe of equality by Dahl (2000). It states that "when binding decisions are made, the claims of each citizen as to the laws, rules, policies, etc. to be adopted must be counted as valid and equally valid (Dahl, 1989).

Although direct democracy has many advantages, there are also some disadvantages to the existing systems of direct democratic government. These disadvantages are that; (1) the costs of

elections with current methods are high and payed for by the taxpayers ; (2) most people are not knowledgeable about most issues ; (3) minorities will have difficulties with passing laws that only concern them, since they need the majority of the electorate to agree with the creation of their policy. This could lead to the majority being able to suppress a minority, also known as the tyranny of the majority (Qvortrup, 2017).

Creating an exclusion between direct and indirect democracy has its issues, since there has never existed a pure direct democracy, nor is it likely that a pure direct democracy will ever exist in practise (Svensson, 2007). The distinction made in this thesis is purely for academic reasons, to supply a theoretical understanding of the two systems of democratic government.

2.3.3   Liquid Democracy

This subchapter of the thesis will provide an explanation of with liquid democracy is, with the use of carefully selected literature on the subject. This will be the last subchapter on the institutional framework, providing a lead up to the next chapter in which I will present the case of Flux and the organisational organisational framework of this research.

According to Swan (2015), liquid democracy is a system of democracy more suitable to the specialised digital era we currently live in. Liquid democracy is a system of democratic government which uses open source software in order to facilitate proposition development and decision making on a (inter)national scale, while being able to adjust to the personal needs of civil society. It does this by making is possible for citizens to either vote on policies directly, or delegate their vote to any other member of the electorate. Assigning a personal delegate instead of a representative, means that a member can give its vote for all issues, for a particular policy area, for one issue or for any length of time. Since your choice of delegate can be changed at any time, a person can become a delegate for a community quite quickly, but this power can also quickly be taken away from them. This is likely to result in experts in a certain area to gain members votes, since they are highly specialised and knowledgable in a certain field and more likely to make a well informed decision than a generalised politician.

Another important advantage of liquid democracy is that it is a proposition development platform, meaning that any member of the electorate can propose a new idea. These ideas will first have to gather support for its proposition. In this discussion phase, ideas can be modified and alternatives can rise to the surface. When an idea for a new policy creation gathers a certain amount of support, it will be put of up for a vote. Swan (2015) has stated that the proposals in favour of liquid democracy have been floating around for years, but it has only just become feasible do to recent technological developments such as blockchain technology.

Issues with the current model of liquid democracy are the same problems that exist in representative democracy, with a different magnitude. These issues can be summarised to the *problem of unequal voting*, and the *problem of policy-inconsistency*. The problem of unequal voting is described as an inequality in voting power that provides counter-incentives to participate directly in collective decision making. Since there might be delegates who have gathered thousands of votes within a liquid democracy, voting directly on an issue for a single individual might have little effect on the overall outcome. The other problem of liquid democracy is regarding policy inconsistency, because there is no predetermined intrinsic connection between the creation of different policies which can result in unsatisfactory performance in its public policy output. When researching articles on collective intelligence and voter competence, there is evidence to support that collective decision making according to the liquid democracy model is likely to be more epistemically reliable and egalitarian than representative democracy (Blum and Zuber, 2015).

There are gaps in the academic research of liquid democracy, since it has been tried out only couple of times on a smaller scale within political parties, but never on a national level. Therefore, it has never been able to test whether liquid democracy would have resulted in better policy results then systems that are currently in place (Blum and Zuber, 2015).

In this subchapter, I have reviewed the institutional frameworks that are most relevant to democratic government in relation to this thesis. Providing these systems of democratic government and electoral systems was necessary to, on the one hand, review academic literature on the institutional framework of blockchain based I-voting in democratic government, while on the other hand, narrow the focus of this research down into the organisational framework in chapter 3.

3   The Organisational Framework

After having introduced the relevant framework of the institutional level, this chapter will now execute a literary research on the organisational framework of my research. After first having provided relevant theory on an institutional level, I will now narrow down our lens to the organisational level. The concepts most fundamental to my research from an organisational perspective; blockchain based based I-voting, trust in government and the concept of institutional work, will be reviewed in this chapter.

This thesis will first provide an introduction on the relationship between blockchain technology and democratic governance on an organisational level, before reviewing literature on the concept of institutional work in chapter 3.1. Following up with chapter 3.2 on *"Blockchain Based I-voting"* which will highlight the aspects of blockchain based I-voting that are most relevant to this thesis; saving operational costs and providing transparency. The "improvement of public services and identity management" are also aspects that will be a big part of improving the relationship between blockchain technology and democratic governance, but they are not relevant enough to the main research question of this thesis to be discussed in the literary review. After having provided the second part of the literary review on the organisational framework relevant to my research question, the methods section will be provided in chapter 4.

3.1   Blockchain Technology & Democratic Governance - The Organisational Level

This chapter will introduce the reader to the relationship between blockchain technology and governance on an organisational level. The purpose of including this chapter in my thesis, is to provide an insight for the reader of what currently being carried out on an organisational level with blockchain technology in government.

The technology that originated from an anti-establishment movement to decentralise power structures, is evolving to be the revolutionary new institutional technology of digitised governance. This development was presumed to be unlikely to happen, since it was created as a manner to surpass intermediaries as centralised authority when making transactions, so that power would be distributed instead of concentrated (Tapscott and Tapscott, 2016).

According to Gupta (2017), civilisation can be defined as an interlocking network of rule sets within society (e.g., governance systems). Institutions are the entities entitled to form the rules of society, by fabricating the constraints to human interaction (North and Alt, 1991). Having software that has the ability to automate rules, and automate compliance with rules is inherently very interesting, because it potentially takes one of the core operating costs of society, the creation, maintenance and compliance with rule structures, and it offers the possibility of automating these tasks.

Blockchain startups have been given the name "rule entrepreneurs" : (1) They make up sets of rules, (2) support those rules with software and (3) launch these rulesets into the world. In essence, this can be perceived as freelance governance. In regards to organisational innovation within government, this an incredibly interesting development for government since it allows for government to offload a majority of the work of managing new technologies, onto new technologies. Fundamentally, the rise of blockchain entrepreneurs has given birth to an industry that provides governance as a service (Gupta, 2017).

According to Atzori (2015), blockchain technology creates the possibility to entirely restructure the manner in which individuals and communities communicate with politics, business and society as a whole. This unparalleled large scale disintermediation has the possibility of swiftly overthrowing the fundamental pillars of current political systems and governance models, bringing to doubt the function of states and centralised institutions. A mixture of the frustrations society possesses with current political systems and the potential improvements presented by this innovation in information technology systems, is creating an internal incentive for the public to create a new system of governance, regulated by instruments that can realise decentralised consensus.

Making use of blockchain in governance would move control and power away from central elites and redistribute it between its users, making the system more open, more effective and possibly more democratic. This unforeseen compatibility between blockchain and governance is unlikely not to result in a revolution in the manner governments behave, and what is to be demanded from governments (Boucher, 2017 ; Hancock and Vaizey, 2016).

3.1.1 The Concept of Institutional Work

Another relevant work in the field of organisations influencing institutions, was published by Lawrence, Suddaby and Leca (2010). They created the concept of institutional work, which refers to; "the purposive action of individuals and organisations aimed at creating, maintaining and disrupting institutions (Lawrence, Suddaby and Leca, 2009).
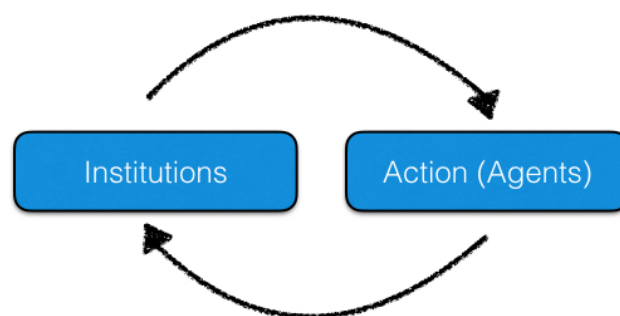

Figure 1:   The recursive relationship between institutions and action (Lawrence, Suddaby and Leca, 2009)

Where ordinarily research focusses on the effects institutions are having on the actions of agents, Lawrence, Suddaby and Leca (2009) focus on how the actions of agents affect institutions. They state that; "*We can not step out of action as practise, even when that action is aimed at changing the institutional order of an organisational field, it occurs within sets of institutionalised rules.*" In their book, the authors have proposed that there are three key categories when studying the effect of actions on institutions; creating-, maintaining- and disrupting institutions. These three categories can be defined in the following manner:

Building Institutions: The institutional work associated with the creation of institutions according to the book published by Lawrence and Suddaby (2006), can be broken down into three different types: *"overtly political work in which actors reconstruct rules, property rights and boundaries that define access to material resources"; "actions in which actors' belief systems are reconfigured"; and "actions designed to alter abstract categorisations in which the boundaries of meaning systems are altered".*

Maintaining Institutions: The view of Lawrence and Suddaby (2006) is that even powerful institutions need maintenance to maintain its level of relevance and effectiveness in society.

Disrupting Institutions: While agents have a long history of disrupting institutions, this part of its relationship has been poorly documented over the years. The parts of the disrupting relationship between agents and institutions that was found, could be classified within the following three categories; "work in which state and non-state actors worked through state apparatus to disconnect rewards and sanctions from some sets of practices, technologies or rules"; attempts to "disrupt institutions by disassociating the practice, rule or technology from its moral foundation"; and "undermining core assumptions and beliefs which stabilise institutions" (Lawrence and Suddaby, 2006).

Now that this section has reviewed the relationship between blockchain technology and governance on an organisational level, the following chapter will review literature on blockchain based I-voting, one of the first applications blockchain technology in government.

3.2   Blockchain Based I-voting

There have been very few cases where blockchain based I-voting has been used in regards to democratic governance. Since it is a new application to a technology that is in its infant phases, and literature on the subject is scarce, we have chosen to make use of a case study on a company that used this technology in practise to fill in information gaps where necessary to help answer our main research question. This chapter reviews the most prominent of academic literature in the field of blockchain based I-voting. The purpose of this chapter is to review existing literature and improve the understanding our blockchain based I-voting.

Governments have been interested in the concept of electronic voting since they first understood the possible applications of the internet, but security issues regarding the possibility to digitally alter elections has kept a safe distance between them. Estonia, Switzerland, Spain, Brazil, Australia, India and Canada all used I-voting for elections in recent years, but none of these countries have used a nation wide blockchain based voting model to date (Castella, 2015).

The first country to initiate countrywide I-voting was Estonia at the 2005 national elections, and in 2015, 30,5% of the votes were casted through digital channels (Barnes, Brake and Perry, 2016). Estonia makes use of digital identifies with remote identification, digital signature functions well as IT auditors to guarantee public trust. In 2017, Estonia has run a successful pilot of blockchain based I-voting through NASDAQ, its stock market technology provider. In 2014, blockchain based I-voting has also successfully been used internally by a danish political party called: Denmark Liberal Alliance (Daniel, 2015). Furthermore, BitCongress and FollowMyVote have been making steady developments in building a blockchain based I-voting platform to supplement current voting methods to create a more personalised government (Atzori, 2015).

3.2.1   Brief Review

According to Madise and Martens (2006), I-voting serves the aim of increasing the participation in voting and thus protecting the representative nature of a representative democratic government. This technology does not affect people who withhold their vote in an election, but it does offer the opportunity to citizens who want to participate, but can not go to the voting booth. New voting methods (e.g. postal voting, advance poll) have changed the manner in which people vote on elections and I-voting is likely the most future proof innovation (Barnes, Brake Perry, 2016).

A paper published by Atzori (2015) states that blockchain can be considered a hyper-politician tool, since it is capable of managing social interactions on a large scale without the use of central authorities. Among many applications, blockchain technology has the possibility of creating decentralised tamper-proof ballots and election results. Although there is plenty evidence in support of blockchain based I-voting, Waterman (2017) states that this technology is currently better then its alternatives, but far from full proof. Among others, It still needs to figure out a manner in which we can safely control eligibility and validity of votes. According to statements published by FollowMyVote (2017), a company designing blockchain based voting systems, these technological issues have been resolved. Further research on the matter by Takabatake, Kotani and Okabe (2016) has lead to the development of an anonymous, fraud proof and safe system to carry out distributed blockchain based I-voting.

The view of Davidson, Filippi and Potts (2016) on the matter is that because blockchain is a cryptographic consensus mechanism, it can offer secure tamper proof voting. By lowering the cost and increasing the trust in voting institutions and the outcomes of democratically decided debates, democracy can be improved by the use of blockchain technology based voting when focussing on more frequent referenda.

Blockchain technology has an enormous potential in reducing the operating costs of the largest organisation civilisation needed to run our societies. There is currently scheduled a non-binding referendum in Australia on whether same sex marriage should be legal, which is going to cost the Australian taxpayers 122 million Australian dollars. This excessive price tag is an incentive not to hold referendums that often. When offering a digital safe blockchain based solution to this problem, it offers the possibility for people to have votes on issues concerning them regularly throughout the year, because it will drastically lower the costs of having a referendum. According to my interview with Nathan Spataro (2017), currently, the price for voting is almost 15 Australian dollars for an election. With the use of blockchain based voting, they are planning to get the price down to below 1 dollar per vote .

The current system offers anonymity to the voter, but the counting process is not transparent. According to Lee, James, Ejeta and Kim (2016), blockchain is one of the most stable forms of distributed ledger and has proven to be difficult to temper with. As once stated by Joseph Stalin (Emery, 2017); "*Those who cast the votes decide nothing, power lays with those who count the votes.*" Transaction on the blockchain is transparent, meaning you can trace the amount votes casted on members while remaining anonymity for the voters. Trust is embedded into the voting system, since it is completely open to spectate. This characteristic of blockchain is especially important, because there has been a global trend regarding a declined trust in government

happening (i.e. in the United States (McKay, 2017), The United Kingdom (Whiteley et al., 2015) and Australia (Markus, 2014)). This Global trend is visualised by the following graph provided by Edelman (2017).
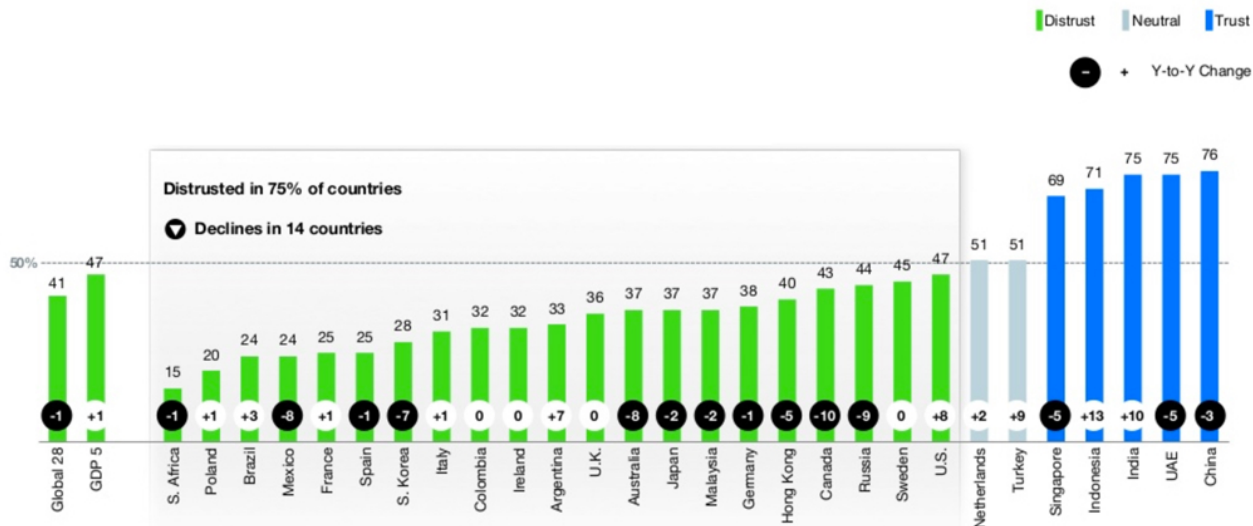
Figure 2: Trust in government further evaporates from 2016 / 2017 (Edelman, 2017)

According to a thesis published by the OECD (2013); "*Trust in government has been identified as one of the most important foundations upon which the legitimacy and sustainability of political systems are built. Trust is essential for social cohesion and well-being as it affects governments' ability to govern and enables them to act without having to resort to coercion. Consequently, it is an efficient means of lowering transaction costs in any social, economic and political relationship.*"

Because of its characteristics of being robust, anonymous and transparent, blockchain technology is considered to be a better solution to voting on a national scale then currently existing alternatives (Davidson, Filippi and Potts 2016 ; Tapscott and Tapscott, 2016). Transparency is considered a key component for trustworthy governments. providing complete transparency in the voting process is believed to have a positive effect on the perceived level of trustworthiness in democratic governments (Grimmelikhuijsen et al., 2013).

In their paper: "*Economics of Blockchain*", Davidson, Filippi and Potts (2016) have claimed that statements on the strategic significance of agenda setting may need to be weakened. The issues in regards to the irrationality of voting (Downs, 1957), claims on expressive voting (Estlund, 1996) and the myth of the rational voter (Caplan, 2008), all need reassessment when democratic governmental voting is executed on the blockchain, because self-organising communities can adapt to an optimal size based on governance-, instead of resource- conditions.

Furthermore, from the perspective of Swan (2015), making use of blockchain technology in the case of democratic voting has a positive effect on providing transparency and accountability of politicians. Furthermore, combining blockchain based I-voting with distributed innovation systems provides a platform for new forms of democracy which, if managed correctly, can provide a foundation for a trustless system with openness and an interactive flow of valuable information between society and government. The concept of delegated decision making, voting in policy instead of politicians, holds wide a wide range of applications for the reevaluation of the role of democratic government in society.

Although there is empirical evidence that claims no technology can turn the vertical relationship of government and citizens to a horizontal one (van Dijk and Winters - van Beek, 2009), this is the first time in history that an invention with this characteristics has been created, thus leaving the possibility for something previously unseen (Atzori, 2015). Other issues regarding blockchain based I-voting are related to coercion, a threat for every voting system that offers remote participation, and accessibility, because there are groups in society who don't have the monetary or intellectual resources to vote digitally (Boucher, 2017).

After reviewing the literature relevant to the main subject of this thesis, I concluded that the existing literature does not allow me to properly address the main question of this paper, since there is no detailed present-day academic literature available on the societal use of blockchain based I-voting in democratic government. To fill in the gaps where needed, I have decided to rely on a case study of a company which is making use of blockchain based I-voting.

This thesis has now reviewed the relevant aspects of the relationship between blockchain technology and democratic governance on an organisational level, and focussed on blockchain based I-voting, trust in government and the concept of institutional work. Now that this thesis has provided the institutional- and the organisational-lens of the literary review, the research methodology will be provided in chapter 4.

4   Methodology

After presenting my theoretical framework, the following section will present my approach to carrying out this research. This chapter will reflect on relevant sources that backup the choices I have made in regards to my research approach, and demonstrate why these where good choices to answer my research question: "What is the societal use of blockchain based I-voting in democratic government?" In order to answer my main research question, I have conducted interviews, analysed secondary data and made use of a case study. This methodology chapter will seek to explain that this project has been carried out with a conscious and deliberate research strategy.

As I previously discussed in the theoretical section, I will be focussing on the institutional-, the organisational- level, the connection between the two levels and its relationship with blockchain technology and democratic governance. Therefore, I am not engaging in concepts that are not central to my research, such as power structures and trust. These topics will be discussed in further detail in the delimitations chapter. With my research question in mind, this thesis set out to create an extensive literary research that resulted in some useful insights. There is consensus in the field from researchers such as Davidson, Filippi and Potts, Atzori and Swan that there is still very little information available regarding the societal use of blockchain based I-voting in democratic government, and how it influences government on an organisational- and institutional-level.

This subchapter will start of by presenting my research approach in chapter 4.1. In chapter 4.2, I will present the manner in which the data collection was carried out and provide present arguments on why these decisions where made. In chapter 4.3 consists of a section on how the data was analysed from the interviews and secondary data collection. Chapter 4.4 will explain how the case was selected to help answer the main question of this thesis and finally, we will conclude the methodology chapter by presenting a limitations section in chapter 4.5.

4.1   Research Approach

This section will present the research approach, and will be followed by a segment on data collection in chapter 4.2 The approach taken in this thesis resembles the hourglass structure, where I started with initial interest that was too broad to be framed into a cohesive research and started narrowing down from there.

I have chosen to make use of the qualitative methodological approach in order to generate suitable data for my case study, because of the choice of topic for this thesis. The subject matter of the societal use of blockchain technology in democratic governance through the means of I-voting is a relatively new subject with, with only few companies who are working in this specific field. Because this topic is comparatively unknown in within academic literature, there was a need for an exploratory research into better understanding the totality of this technological development. Furthermore, the little number of potential case study candidates would have made it incredibly difficult to generate valuable quantitive data on this topic.

For the purpose of this thesis, I will be following the view of Merriam (1998). Her perspective is that qualitative case study should follows constructivist views, since she maintains *"the key philosophical assumption upon which all types of qualitative research are based is the view that reality is constructed by individuals interacting with their social worlds.The researcher brings a construction of reality to the research situation, which interacts with other people's constructions or interpretations of the phenomenon being studied. The final product of this type of study is yet another interpretation by the researcher of others' views filtered through his or her own (Merriam, 1998)."* Reality is subjective by nature, and is open to multiple interpretations (Yazan, 2015).

Although using quantitative research is useful for the simplification and management of data, without destroying complexity and depth of a car company, there are certain limitations to this approach. One limitation of choosing this research approach is that it has been a time consuming and labour intensive process (Flyvbjerg, 2006).

After having presented the research approach of this thesis, the following chapter will dive into the method that was used to collect data, for the purpose of answering the main question of this research.

4.2   Data Collection

In this section, I will present the methods that have been used to gather data to answer my main research question. The data has been collected through the means of interviews, which will be subchapter 4.2.1, and the analysis of written sources in subchapter 4.2.2. The purpose of this chapter is to provide clarity for the reader on the details of reasoning for specific interview methods and discussion on the chosen information from written sources. In the next chapter I will discuss my method of analysis used for sources of this thesis.

I used multiple sources to gather data from for the purpose of this research, since it was insisted upon by multiple theorists in the field (Merriam, 1998 ; Stake, 1995 ; Yin, 2002). While Yin (2002) advocates the use of both quantitative and qualitative for the collection of data, I have chosen to follow the views of Merriam (1998) and Stake (1995), which suggest the exclusive use of qualitative data. Furthermore, I have followed the view of Merriam (1998), which states that *"qualitative case study researchers utilise three data collection techniques conducting interviews, observing, and analysing documents."* Since I am a novice in interviewing, following the guidelines for data collection provided by Merriam proved to be quite useful (Yazan, 2015). Now that I have introduced the theoretical foundation for my method of data collection, I will go into more detail in the following subchapter on the forms of data being used and for what reason.

4.2.1   Primary Data: Interviews

The reason for making use of interviews as my method of data is because according to Kvale (1996), interviews are an ethnographic powerful and sensitive method to get in-depth information that would not be able to be retrieved when using other methods of data collection. For the purpose of answering my main research question, it was necessary for me to gather in thorough information on the subject, for which conducting interviews proved to be the most effective way. In this section I will provide the most essential answers relevant to the reasons for conducting the interviews in the manner in which they were carried out.

The purpose of carrying out a qualitative research interview is to understand on a factual and a meaning level what the interviewee is covering. In doing so, it is important to be aware of potential biases of the interviewer towards the interview so we can account for these. Although secondary data can provide a useful background story to a subject, gathering primary data through an interview can be particularly useful to understand the subject its story behind behind their experiences and gather in depth information on the topic (Kvale, 1996). Conducting the interviews was carried out by making use of a semi-structured interview. This method offers a balance between the flexibility of an open ended interview, and the focus of an ethnographic survey, so that

when the interviewer feels the need to explore certain topics in further detail, he is free to do so which provides a conversational flow to the whole endeavour (Gullickson, 1995).

Throughout this project, I conducted two interviews with both co-founders, Max Kaye and Nathan Spataro, of the Australian political organisation Flux. The reason for wanting to interview Flux, is because they are to my knowledge one of the only organisations in the world that use blockchain based I-voting as a means to improving democratic government, which is in line with the topic of my thesis. Contact was initially made through e-mails, but the interviews were eventually carried out over Skype through a person-to-person encounter, due to the physical distance between the interviewer and interviewees (Merriam and Tisdell, 2015). The setting of both interviews was casual, with occasional drifting of into subjects not directly related to this paper, but having an informative goal for the background story of the interviewee. The interviewee had communicated in advance that the time frame of the interview would not be a problem, since he wanted to be of service in creating academic literature on the topic. Therefore, the questions were asked in an exploratory manner, leading the interviewees to feel free in answering my questions in a broader matter then only the topic of this thesis.

Using the internet led to some small connection issues, which I was able to resolve by recording audio and video of both interviews. Documenting the interviews in audio and video, allowed me to focus completely on the interview without the need for making notes, other than relevant personal thoughts. The reason for interviewing these people, was because they were likely to be most knowledgable about this political organisation, the technicalities of the technology they are using and the motivations behind their decisions. Because of this, both co-founders were very likely to contribute to the development of insight and understanding of the phenomenon (Merriam and Tisdell, 2015). I am aware that the co-founders will have a more subjective on the topic of their political organisation, which is something I should be aware of in choosing the method of analysis of the data in the chapter 4.4.

For the purpose of gathering information from Flux on their use of blockchain technology, I wanted to ask question that are more in line with the qualitative search method, being open ended and less structured (Merriam and Tisdell, 2015). This allowed for the interviewee to respond on their own accord and drift into neighbouring subject whenever they felt the need, but leaving me with the possibility of steering the questions back on track, or diving in depth when necessary. Throughout the interview, I had to be aware of the power structures that were in place between the interviewer and the interviewee. Since the role of the interviewer is to lead the interview and gain valuable data on relevant subjects, I had to stay aware that a good conversation is not a goal, but a tool through which the interviewer can gather descriptions, narratives and texts, which I eventually had to

interpret according to the interests of my thesis (Kvale, 2006). The transcripts of actual interviews that were conducted throughout the course of my research can be found in appendix 1 and 2.

The manner in which I have been analysing the interviews by following the method provided by Gorden (1992). In this method of analysis for interviews, also known as coding, I have went through the interview one-by-one to analyse which parts of the conversations where relevant to my thesis, because it reminded me of a theory or concept. In the case analysis, I have focused on making a description of phenomena that is as close to the data as possible, by preventing from overanalysing the interviews when conceptualising the data.

Now that his subchapter has provided a more detailed theoretical foundation for the choice of method in my interviews, we will continue by going to the next subchapter, in which I will explain the methodology used for my written sources.

4.2.2 Secondary Data: Written sources

In this section I will generally discuss the sources of secondary data I have selected and provide a reason for choosing these types of authority. The goal of having secondary literature in my thesis, is to contribute to scientific knowledge through offering an alternative perspective. The purpose for providing the reader with this information is to validate the sources used for my thesis. Afterwards, I will provide a section on the method of analysis in chapter 4.4.

4.2.2.1   Introduction & Case Study

For my written sources, I have made use of different forms of information. For the introducing chapters, I have made use of internet websites, newspaper articles, books, academic literature, papers, and thesiss, as you can see from my reference list.

Internet websites, newspaper articles have been able to provide me with exploratory information on the subject. In the introduction, I needed to create a clear and simple explanation on how blockchain technology works, while including the relevant characteristics, which could not be found in the more specialised sources.Internet websites and newspaper articles have also helped me in creating a deeper level of understanding of my case study, to fill in the gaps where necessary. For example, newspaper articles have assisted me in seeing the bigger picture on how open Australians are to making use of the technology and ideologies provided by Flux. Books on blockchain technology, institutions and organisations have helped me in structuring the information I provided in my thesis in an orderly manner. Academic literature, papers and thesiss filled in the gaps when the section needed more specific information on concepts.

Although normally there wouldn't be any theory introduces in the case study, because Flux has such a theoretical foundation on which it has based its ideologies, we will shortly explain some of the theories used by this political organisation to back up its views. The purpose of this is to provide an understanding for the ideology of Flux, and future research suggestions.

4.2.2.2 Methodology & Literary Review

For the literary review chapters 2 and 3, I have at certain sections made use of books and thesiss, but the literary review is mostly based on published academic literature. The reason for primarily focussing on published academic literature for my literary review and methodology, solidify the validity of my thesis. I have analysed the books, thesiss and academic literature by following the approach of Merriam (1998), which will be discussed in the chapter 4.4.

While I was able to gather lots of useful data for my research through the use of academic literature and books, there were not able to provide me with up-to-date information on the developments within this technology. Since blockchain is evolving at a high pace and there is a high time lag on when these developments are published, it was necessary to keep in touch with my case study to be aware of the latest information on the issue of blockchain based I-voting. Books on the subject of institutions, organisations, democracy and blockchain have also been a major help in guiding me to gather the needed level of understanding on topics on which I was previously unfamiliar with. Now that we have discussed the methods of data collection that was used in this thesis, the next subchapter will focus on the blind spots of this thesis

4.2.3 Blind Spots of Research

Just like in every study, there are several blind spots to my research, that I have to take into account. This section will present the most relevant blind spots of this research. Afterwards, we will continue this thesis by providing the reader with the methods of analysis I used.

One of the blind spots of this research, is that blockchain based I-voting is a technology which is very much in its infant phases. Although this technology has been tested by Flux to handle millions of votes within a timeframe of 24 hours, and there are other companies working with the same functionalities, blockchain based I-voting has not been tested on a national scale with actual people. Therefore, when focussing on the societal use of blockchain based I-voting in democratic government, I can only consider possibilities that fall within what is actually capable of being known. According to Deutsch (2011), every significant innovation has unpredictable effects, which then again lead to knock on effects. After a few steps of this cycle, the consequences of these consequences tend to become the major components of what is happening.

Another important blind spot is the bias of the author which has created this thesis. Even though he has made an active effort to prevent prejudice from happening when collecting data, his interest in the topic and the surrounding case organisation are likely to lead to a minor form of blind spot bias. Research has shown everybody is affected by blind spot bias, unrelated to peoples level of intelligence or awareness (Scopelliti et al., 2015).

After having presented the methods of data collection, the following chapter will provide the method of analysis I used for my primary and secondary data.

4.3   Method of Analysis

This chapter will provide information on a theoretical foundation on how my primary and secondary data will be analysed. The purpose of this section is to inform the reader on the methods of analysis used in this thesis, and to create a foundation for chapter six, in which the case analysis is presented. This segment will be followed by chapter 4.4, which provides relevant information on why I have chosen the case of Flux in order to answer the main research question of this thesis.

4.3.1   Primary Literature

I will be using an instrumental case study for the purpose of this thesis. According two Stake (1995), an instrumental case study involves using a case study of one case to gain insight on a specific phenomenon. For this thesis, that phenomena is the societal use of blockchain based I-voting in democratic government. By making use of this method of analysis, I aim to be able to successfully generalise and develop theory from the case of Flux.

There are several theoretical stances one can take when determining the manner in which to analyse data. For my analysis I have chosen to follow the Stakian (1995) approach. Stake defines the analyse of data as; *"a matter of giving meaning to first impressions as well as to final compilations. Analysis essentially means taking our impressions, and our observations apart. Each researcher needs, through experience and reflection, to find the forms of analysis that work for him or her".* For the analysis of my case, I will be making use of a method presented by stake called naturalistic generalisation analysis, which is a general analytic approach where the researcher actively interprets the data with ana eye towards the way an audience should be able to transfer or apply the broad categories of finds from one case study to another case (Cambiano, Carter Speaks and Cambiano, 2015).

The view of stake for the observer to interpret the workings of the case is that there is no predetermined point from which the analysis of a research should start, because there is no exact point where the data collection starts. I choose to collect a lot of data on one case, instead of collecting a little data on a lot of different cases, since this is believed to be a better for the analysis of the collected data. Further detail on how this was actually carried out can be found in the case analysis itself, in chapter 6.

4.3.2   Secondary Literature

Since the literature used for the purpose of this research is so dense and rich in information, not all the data that is gathered can be used in a qualitative research. Therefore when analysing the data, the researcher must identify and separate the useful data from the not so useful information. The purpose of handling data in this manner, is through organise it into smaller themes, as has been done in the literary review of this thesis (Creswell, 2007). Now that we have provided the reader with the method of analysis used for this thesis for the primary and secondary data, the next chapter will present an academic basis for the selection of my case.

4.4   Case Selection

This section will provide an explanation on the reasons for choosing this specific case in order to complement the existing literature on answering my main research question. The purpose of this section is to create a better understanding for the reader, to validate of the choices I have made for selecting this specific case, and supply the reader with a theoretical foundation on why I have only used one case for the purpose of this thesis. This chapter will lead to chapter 4.5, which will present the limitations of this research.

The reason for choosing Flux as a case company to answer my main research question is because there exist only a handful of companies that are making use of blockchain based I-voting in this specific manner. This meant that there were only a few companies suitable to investigate, and Flux was the only organisation that showed interest to initiate meetings and cary out a multitude of semi-structured interviews.

Another important reason for choosing this company for a case study was because Flux is a political organisation. There are some for profit companies that are developing similar software with the plans of commercialising on this concept, which creates a completely different incentive model for using this new technology on a level of democratic government. Flux is planning to use blockchain based I-voting as a foundational layer, to build a more advanced system of democracy on. This subject will be discussed in more detail in chapter 6. Because blockchain based I-voting was not their sole focus point, interviews on the subject created interesting conversation on the

possibilities that come along using this technology as a foundation for new models of democratic government that can improve society. Conversations on topics that build on this concept, have lead to the exploration of fields for potential future research which will be discussed in chapter 9.

A limitation of this research could be that answering our main research question through the use of a single case study would seem as a generalisation of the effects of the implementation of blockchain technology on democracy and its underlying power structures. However, according to Evers and Wu (2006), if sensible, a case study can be utilised to defend the making of certain provisional generalisations from single cases. This statement is in line with the views of Tsang (2013), who argues: "*that case studies have merits over quantitative methods in terms of theoretical generalisation, identifying disconfirming cases and providing useful information for assessing the empirical generalisability of results.*" Furthermore, according to Flyvbjerg (2006) proper generalisation through the use of single case study research can contribute to scientific development. Wanting to approach our case study in an effective manner to bias towards information relevant to our research question has lead us to consider multiple research techniques. According to Stake (1995), it is not uncommon to make assertions on a relatively small database, taking the responsibility of interpretation. Trying to understand how the actors within the organisations see things while not disturbing the activity of the case is preferred, with the creation of multiple realities as focus point of the qualitative research method.

Now that I have informed the reader on the reasoning behind my choice of case selection, we will shortly introduce the case. Before being able to provide theories relevant to my case company Flux, it is important for the reader to have a basic understanding of what Flux does, and why I have specifically chosen this political party as a case study that benefits the purpose of this research. Therefore, I will quickly supply the reader with some necessary background information on the case company. The full case study will be supplied in chapter 6.

Flux is a political party based in Australia founded on the idea that the current system of democracy is not set up in a manner that creates a continuous desirable result of good policy. Therefore, the founders of Flux, Max Kaye and Nathan Spataro, have designed a system that works with flaws in our current system of democratic government and improves upon them. This system, which is called Issue Based Direct Democracy (IBDD), focuses on giving the electorate direct access to the decision making process by blockchain based I-voting, and letting specialists in a field generate policy instead of career politicians, with the use of distributed innovation systems. IBDD allows for voters to trade their votes on different issues, to encourage citizens to have their say on policy creation that affects them most. By letting communities self organise, the idea is that they will naturally end up with specialists making decisions, while citizens will have a larger input on issues that matter to them. This system of democracy, where voting on policy creation is carried out safely in a digital environment is achievable, due to the invention of blockchain technology.

Now that I have introduced the basic idea behind Flux, this thesis will continue this method section by providing the reader with a theoretical foundation for using the case study method.

4.4.1 Case Study Method

The reason for choosing the case study method to answer the main research question of this thesis, is because this method allows for the collection of in depth descriptive data. The strength of the case study method lies in the capacity for in-depth research of complex relevant phenomena in real-life settings (Stake, 1995). I have chosen to make use of the case study method as defined by Merriam (1998), in order to help me with the design of my case. She defines a qualitative case study research as *"an intensive, holistic description and analysis of a bounded phenomenon such as a program, an institution, an organisation, a person, a process, or a social unit* (Yazan, 2015)."

According to Merriam (1998), the case study method has unique distinctive characteristics that make it a very useful research methodology. The case study method is (1) particularistic, meaning that it focusses on very specific events, it is (2) descriptive, suggesting that it yields a very information rich dataset, and (3) it is heuristic, which indicates that this method brightens the readers understanding of phenomenon under this particular study. The view of Merriam is in line with the perspective of Stake (1995) as seeing the case study method as an integrated system and the viewpoint of Smith (1978) of seeing the case as a bounded system (Yazan, 2015).

I have chosen not to follow the approach of Yin (2002) or Stake (1995) in the design of my case study, and follow the approach of Merriam (1998), because she presented a step-by-step process of designing qualitative research in a a rather detailed fashion (Yazan, 2015). Since this is my first time writing a thesis in this structure, having a well structured lay-out of a research process at my disposal guided me into the right direction. This approach helped me in answering the main research question of my thesis, since it helped me in providing structure to the research.

An advantage of using the case study method is that it at times uncovers extraordinary new behaviour that would not have been uncovered otherwise. This in depth exploration through the case study method provides projects that are such richer in in-depth information than could be gained in any other manner. Exposing details in this way stimulates further research in the field (Searle, 1999). Because Flux has such a deep theoretical foundation to ideologies, they have been very willing to present the author with additional academic literature to improve upon my research.

The limitations of choosing the case study method for the collection of my data is stated by Willis (2014) who says case studies have become a synonym for carrying out research where anything

goes. Yin (2002) sees the aspect of a lack of structure as the most important issue of performing case studies. I have been focused on preventing this limitation by following the structure provided by Merriam throughout this thesis, since she has made efforts to supply methodological techniques and epistemological grounding for the research structure (1998).

Now that my use of the case study method has been presented in this section, the next chapter will provide limitations of this research, while additionally summarising the limitations of the methods previously mentioned in this chapter.

4.5   Limitations

This chapter will round of the methodology section by providing the limitations and delimitations of this research. After this section, I will provide the reader with an introduction to the institutional context of Australia. This chapter is needed to provide the institutional and organisational framework in which our case company is working in.

As stated earlier this methodology, there are limitations to the chosen research approach in being time consuming, I made use of a face-to-face method of collecting data, which is considered to be a very time intensive method collecting primary data (Flyvbjerg, 2006). While being on the topic of time, the institution has created time constraints for when this thesis has to be handed in. The choice of only using one case case study and generalising from that perspective and the lack of structure that can follow from making use of a case study method have all possibly affected my methods and analysis of research data (Willis, 2014).

Even though I got to talk to both of the co-founders of this political party who are likely to hold the most valuable and correct information on their organisation, there are limitations to the information I received from them. Since I have only had the opportunity to communicate with the founders of the political party, information on the subject of blockchain based I-voting comes from a biased insiders perspective of the organisation.

Now that the methodology section has been provided, we will continue with an empirical introduction to the institutional context of Flux in chapter 5. This section is functional for the reader, in terms of supplying the institutional framework in which Flux is working.

5   The Institutional Context of Flux

In this chapter, we will provide an empirical introduction to the institutional lens of the framework of the Australian case political party, Flux. The reason for this being, to provide the reader with a clear understanding of the institutional framework in which this organisation is working. This will be carried out by examining the relevant institutional setup that has influenced the case of Flux in chapter 5.1, and discuss specific theories that have influenced Flux directly in chapter 5.2. This chapter will create a foundation for chapter 6, in which I will analyse the case of Flux.

5.1   Institutional Framework

This chapter will provide a short and focussed section that will state the relevant institutional context of my case company Flux. The sections that will be discussed are the Australian parliamentary democracy in chapter 5.1.2, and the electoral system of Australia in chapter 5.2.2.

5.1.1   The Australian Parliamentary Democracy

This subchapter will make use of an empirical literature review to explain how the Australian government is set up by continuing to build on literature provided by the previous chapter and adding some extra scholarly articles specifically focussed on the Australian system of democracy. This is to provide a smooth transition to the next chapter, which will discuss representative-, direct- and liquid-democracy.

Australia is a parliamentary democracy which was modelled after the westminster system, and makes use of a model of representative government. Different systems of democratic government will be discussed in more detail in the upcoming chapter 2.3. These representatives are responsible for; (1) the formation of government through achieving majority in the House of Representatives, (2) the passage of legislation by reaching a majority in parliament. Since Australia has a bicameral parliament, meaning legislative body with two chamber, passing legislation requires support from the House of Representatives and the Senate. The last function of the representatives is (3) to supervise and investigate executive government, public service (i.e. the bureaucratic part of government) and the spending of taxpayer money (Barrett and Aitkin, 1978).

One of the core elements of the Australian political system is a term called "Responsible Government." According to Hamer (2004), Responsible Government is a form of government where the executive government is chosen by, answerable to and maybe be removed by the elected parliament. The practical effect of having a responsible government was to lessen the power of the British monarchy. Since Australia was once a colony of Britain the monarchy used to hold power over decisions made in Australian politics. By implementing responsible government, the power of the crown was now to be exercised in accordance with the will of the people (Australianpolitics, 2017).

The electorate system of Australia is called the alternative vote system, also known as instant-runoff voting. The alternative voting system differs from the most common electoral systems, plurality and proportional representation. Details of each electorate system will be handled more deeply in the next chapter (Hix, Johnston and McLean, 2010).

Now that this chapter has shortly introduced parliamentary democracy, presidential democracy and the system of democracy used in Australian government, we will go into the next subchapter where we will discuss the systems of democratic government, and the electoral systems most relevant to our case. This is necessary to create a better understanding for the reader on what the difference is between the electoral systems that are most used in western democratic society, and the electoral system that is designed by Flux. Furthermore, it allows us to get a better understanding of the complete institutional framework of the case company.

5.1.2 Electoral System

The electoral system of Australia is neither us a plurality or a proportional representation system, but a majority preferential system also known as the alternative vote (AV). Under the alternative vote system, rather than indicating a preferred candidate, electors are asked to rank candidates in order of preference. A candidate is elected whenever he / she gets more then half of the first preferences. When no candidate receives a majority of first preferences from the electorate, the one with the least first preference votes is eliminated, and his / her second preferences get distributed among the remaining candidates. This process of progressive elimination of the candidate with the least support is continued until one candidate achieves a majority. By following this process, the alternative vote system is designed to produce election winners that a majority of the electorate can agree on (Hix, Johnston and McLean, 2010).

Now that we have introduced the model of democracy and the electoral system that are relevant to the Australian context in which Flux is operating, the following chapter will provide a literary foundation to the theories that have influenced this political organisation.

5.2   **Flux:** Introducing Influential Concepts

This section of chapter five will introduce two concepts that are relevant to Flux and the manner in which it is behaving in its ideological framework: Good Governance (5.2.1) and The Political Decision Making Process, with a specific focus on public choice theory (5.2.2). The goal of Flux is to create a system that biased towards the creation of good policy for the Australian society. Each group (i.e. agent) affected by, or interested in the creation of a policy, will have different objectives and will try to influence the decision making process in a manner that enables them to reach their particular set of objectives. Meaning that every interest group, for example voters, politicians, bureaucrats or lobbyists will try influence the outcome of the decision making process in their favour (Simon, 2003). This chapter will introduce an academic foundation of these concepts, which on the one hand, provide the reader with theoretical background knowledge on the case, while on the other hand it helps the author in answering the two subquestions relating to the case.

5.2.1   Good Governance

The reason for providing a subchapter on good governance, is because this is a concept which my case company is biasing its policy creation towards. Therefore, it is useful to inform the reader about other present day definition of good governance which I will be referring towards in the following chapters.

Abdellatif (2003) provides this paper with a definition of good governance, which differs from democratic governance, from world renowned institutions such as the world bank and the UN development programme. The heart of achieving good governance is building the appropriate institutions, and innovating them when they become outdated by their surroundings. To achieve good governance, one must develop stronger vehicles for representing society, decentralise democratically to create stronger local democratic institutions and develop free and independent media. Please keep in mind that each nation and society is different, and the application of good governance should be in regards to its local context. This concept of good governance is in line with the definition Flux has given to good governance in their white paper (Kaye and Spataro, 2017).

5.2.2   Public Choice Theory

The purpose of this subchapter is to improve the readers understanding on the subject of political decision making. The reason for this section is to supply the reader of this thesis with an improved understanding on who's interests are pursued when policy is created. We will do so by making use of public choice theory which is derived from the (1) *rational choice model, (2) the systems model* and *(3) the institutions model.* After this subchapter, this thesis has provided the complete relevant

institutional framework in which flux is working, which will bring us to the next chapter on the organisational level.

This economic perspective on voting behaviour is commonly referred to as the *rational choice model,* one of the main models of political decision making (Downs, 1957). At the other end of the spectrum of political decision making, is *the systems model,* which focusses on the manner in which respond to changes in their external environment. This model emphasises on the outside actors that influence the interest group in the outcome of their decision making (Weitman, 1977). In the middle of these two models is the *institutions model*, which focuses on the institutions which are positioned in a society and the effects they have on steering policy creation. This model follows the idea that institutions in society affect which policies are likely to be implemented (Sterner and Coria, 2016). The reason for providing this introduction to these main models of political decision making, is to provide a build-up for our theory section on public choice theory, which presents a theoretical foundation for our case (Downs, 1957).

According to Gwartney and Wagner (1988), Public choice theory is a tool to apply economic analysis to government decision making, developed from the study of taxation and pubic spending. This sub field of positive political theory is defined as the field that studies political behaviour of self-interested agents. Public choice theory takes principles that economists use to analyse behaviour in the marketplace, and applies these principles to peoples collective decision making. This model is based on the assumption that even though people acting in the political marketplace have some concern for others, their ultimate driver remains to be self interest (Shaw, 2002). Public choice theory is considered to be closely related to social-choice theory, which takes a mathematical approach to the analysis of individual interests, votes and welfares. Both of these fields are considered to make use of lessons learned by economics and game theory. This chapter will describe how we will use the lens provided by this field of study, which was founded in 1948 by Duncan Black, to provide a foundational argument for this thesis (Shughart II, 2008).

As stated by Shughart (2008), public choice theory, which is in line with the economic rational behaviour model on which it is based, is founded upon the concept that the choices of people are mainly steered by their own self interest. This theory creates a parallel between the field of political decision making and the rational actor model of economic theory. A key finding of public choice economics is that democracy is less likely to improve by the having better agents, such as highly educated voters or purely philosophical politicians, due to at times having a poor model of incentive (Buchanan and Tullock, 1965). This problem that occurs when one person (i.e. agent) can make decisions on behalf of another person is also called the agency dilemma; where representatives have self interest that conflict with the group they ate supposed to be representing (Ross, 1973).

Based on the assumption of the rational choice model that politicians, voters bureaucrats and all other interest groups, are motivated more by self-interest than by public-interest, leads to believe that the creation of good policy is more likely to be achieved by the formation of better institutions, than the individual improvement of agents.

Even though there is much evidence supporting the public choice model when firms connected to the government are getting much better government contracts (Brogaard, Denes and Duchin, 2016), and evidence supports that firms hire government officials in exchange for better contracts, thus serving self interests instead of the public good (Canayaz, Martinez and Ozsoylev, 2016), the public choice model is not short of criticism either. One issue that the field of public choice theory has been confronted with recently, was suggested by Caplan (2008); voters are irrational and biased and thus not conform to the concept of being a homo economics. He states that we overestimate voters, and underestimate the wisdoms of market mechanisms. Caplan promotes the idea of letting democracies perform less work, baby letting markets mechanisms take over the task of guiding the political decision making process. Another criticism of public choice theory is its low amount of empirical evidence and its perceived focus on putting democracy in a negative light (Kelman, 1988), but according to Ginsburg (2002) this is not at all the case. Public choice theory has created academic literature in field of economics, sociology, political science, international disciplines and many other disciplines.

Now that we have provided an empirical introduction to the institutional context of Australia and theories relevant to the ideology of Flux, the next chapter will present the case of Flux and will answer both subquestion, on why and how this political organisation is changing democratic government

6 Case Analysis

To answer the main question of this research, I have chosen to conduct a case study on business level. The thesis was in need of finding more detailed recent information on the subject of the societal use of blockchain based I-voting in democratic government, and found such a study in the Australian political organisation called Flux. The insights of this research translate directly into new knowledge for the field of blockchain based democratic governance literature. The purpose of this case study is to gather data on actual developments happening in the field, which will help in answering our main research question on the societal use of blockchain based I-voting in democratic government.

Important note, to keep this study as unbiased as possible, two independent research questions have been chosen for the case study itself. The review of this case study will focus on answering the subquestions on: (1) "Why is Flux changing democratic government?" and (2) "How is Flux changing democratic government?" These subquestions will be of help in answering the main research question of this thesis. The purpose of making use of this case study and answering these subquestions, is to gather data in order to properly answer the main question of this research. Meaning that this particular case company has been selected, because it suits the purpose of developing and extending the topic, logic and structure that has been presented until now.I will be analysing the case through making use of a analytical method provided by Stake (1995) called naturalistic generalisation analysis, which is a general analytic approach where the researcher actively interprets the data with an eye towards the way an audience should be able to transfer or apply the broad categories of finds from one case study to another case (Cambiano, Carter Speaks and Cambiano, 2015).

I have gathered information on Flux from arranging semi-structured interviews with both co-founders of the organisation, and whenever needed, made use of self published media sources to fill in the gaps.[3] The case study will look into what happened in Flux from the 1st of January 2015 until late August 2017. We have chosen this time period, because this is from the start when Flux was founded until the last time the team was in contact with the founders of flux.

I have chosen to divide the case study into two parts. Part (1) will answer subquestion one, and discussed why flux is changing democratic government. Part (2) of this chapter will focus on how Flux is changing democratic government and why this movement has started only recently.

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[3] Flux has published their own white papers, video conferences and presentations through their website and Youtube channel.

6.1   Why is Flux changing democratic government?

This section will answer the first sub question of this paper; "Why flux is changing democratic government?" In order to understand correctly <u>why</u> Flux has chosen to go about creating better policy by changing the system of democratic government, I will now present part one of the case of Flux.

This case study is bout an Australian political party called Flux, that was founded in the year 2015. Its co-founders; Max Kaye and Nathan Spataro observed and analysed their current representative democracy, and the problems this political system set out to solve when it was created, in relation to the questions it tries to answer in the 21st century. Representative democracy was founded in the 18th century to solve political and practical problems for society. The working classes relied on representatives to fight for their cause at a governmental level. The limitations in safe long distance communication and education made it impossible for the working class to participate in debate and policy creation. These representatives could afford to be policy generalists, since 18th century society was far less specialised than currently in the 21st century. Due to developments in society and technological improvements, we now have highly educated and specialised citizens with the ability to meaningfully engage in policy maters and the possibility of instant safe communication over long distances. The most important thing is considered to be the previously narrow range of issues concerning the majority of citizens, has since drastically diversified and expanded into a large number of increasingly specialised policy areas as society has evolved (Kaye and Spataro, 2017). I will get back to this topic when answering subquestion 2.

Some time after Max and Nathan founded Flux, they noticed that there wasn't an organisation at that moment, who designed blockchain based I-voting systems to their likings. Therefore, they decided to design and create this system themselves under another organisation called XO1. XO1 is a startup that delivers the software for blockchain based I-voting to Flux for free. O1 is a company that produces secure voting software and commercialise upon that product, with the aim of being profitable. Therefore it is building a technology that is applicable to not only political parties, but also to different industries and markets. Both Max and Nathan have a history of working with blockchain technology, but especially Max, who worked in the Ethereum development community. By creating their own company, they are completely in control of the functionalities and design choices made in the creation of their system, plus it allows them to offer the system for free to Flux and other political parties with likeminded intentions. The possible effects of the relationship between XO1 and Flux will be handled in chapter 7 which presents a discussion section.

6.1.1 Trust in Politics

As stated in the literary review, there has been a global trend regarding a declined trust in government. In figure 2, it is depicted that the percentage change of trust in Australian government was in the top three of biggest decreases (Edelman, 2017). Flux played into this movement by creating a political party based on an open source technology. Open source, means that their technology on which their decision making is based is completely transparent. They have designed a decentralised blockchain based voting system that has been designed specifically to avoid the problem of distrust in a system. Nathan Spataro (2017) stated in our interview:

"if we did decide that we would want to vote in our own way and not vote according to the voters interest anymore, we couldn't survive. We are really confined in terms of how we could misuse power, because any miss use of power would destroy the organisation. The whole system is inspectable. And a thing to remember as well is our objective. If you look at all other revolutions, they had strong missions and people got behind them and supported them but they were about ideologies. This is not about ideology at all. Our Only concern is about making democracy better."

As stated in the literary review, trust is considered to be a central concern for nation states, and a key determinant of effective functioning of democracy (OECD, 2013). The lack of trust, creates a societal itch for new political organisations to cater to the needs of the people. This is the first part of the reason why Flux is changing democracy.

6.1.2 The Ideology of Flux

An important difference between Flux and current political parties is who they consider to be the authoritative source of "good" policy. Instead of asking questions on who should rule in a democratic society, thus determining who should become the representatives, Flux believes in the idea of knowledge without authority, presented by Popper (1960). Popper states; *This political question* (on who should rule) *is wrongly put and the answers which it elicits are paradoxical. It should be replaced by a completely different question such as; how can we organise our political institutions so that bad and incompetent rulers can not do to much damage. I believe that only by changing our question this way, can we proceed to move towards a reasonable theory of political institutions. The question about the source of our knowledge can be replaced in a similar way (Popper, 1960).* According to Nathan Spataro (2017), good policy is difficult to define but simpler to explain. In our interview, he used the following explanation:

"If I told you that tomorrow the federal government of Australia wants to bring in a policy that says that anyone who earns under a certain amount of money per year, will have to register to become a slave. And they will be slaves for anyone else. For such policy, we get a sense of it being that bad is because it is bad for our collective prosperity. So things that

are bad for our collective prosperity are bad policy. And I think slavery is quite good example of that, but essentially, good policy is what increases prosperity and the quality of life for people. Makes their lives better ."

"So there is a sense for it. It is hard sometimes to apply strict criteria to the policy itself, since often you don't really know whether something is good or bad policy until you see the results. From the results you can judge for yourself whether it has a net positive effect on society and does it increase prosperity. Its one of those things where over time, when we make mistakes, the system will tend towards good policy, because the mistakes that we make, we learn from, we correct and we are able to resolve in a much quicker fashion than what we are able to do at the moment."

Flux believes in the idea of instilling a process into a political system that creates new means to solve our societal problems, and putting safeguards around that political system to ensure it doesn't do us damage. If the political system in place does do society damage, then the political system should have the ability embedded into it to correct the mistakes as quickly as possible. Democracy shouldn't be about making decisions about who should rule within a system, which is essentially the same as asking who is the authoritative source of of good policy. In a representative democracy we choose rulers, in a direct or liquid democracy the people choose policy, making the people the authoritative source of good policy regardless of whether this policy is positive for society or not. According to Deutsch (2011), there is no authoritative source of knowledge, thus treating the public as such makes the same mistake as treating anything, any person or any group as final authority.

Averting the ordinary path taken by political parties in having a distinct political ideology, Flux has chosen a different objective. Instead of pursuing any political view of being left or right winged, its members are dispersed all over the scale of left and right wing politics because they are united by a common thread. Its members believe that even if they have radically different views, they should be able to contribute ideas, provide meaningful discussions and have an actual say on issues discussed in government. In the words of one of the co-founders of Flux, Nathan Spataro (2017);

"The world is becoming more complex, and the requisite knowledge and understanding required to make good decisions in certain policy areas requires more specialised knowledge. Politicians are considered to be generalists, and they are good at being politicians. Not necessarily good at understanding the industries or field that they are supposed to be understanding and eventually making good decisions about.

So, as long as you have a political system that centralises decision making, you basically force people to educate themselves on a vast array of political issues and be generalists as well, while our society is build around the concept of specialisation. If we build a political system that allows you to focus on specialisation, so the things that actually matter to you, you have a good reason to be educated and it makes it far easier. We think that there will be a lot of networks that will spring up around this idea of decentralised political decision making, such as where people are able to find resources and educate themselves quicker, easier and have the willpower to do it, because they actually have real political say on things that matter to them."

To be able for ordinary people to do this, Flux has designed a system of democratic governance with in mind the fundamental flaws of our current democratic system that proved to be useful in the past, but no longer serve its purpose and need to be replaced. It has designed a democratic decision making system that removes authority from the decision making process, and is designed to let good ideas rise to the surface. This system is called Issue Based Direct Democracy (IBDD) and will be thoroughly described in the following chapter on how flux is changing democratic government.

To summarise the answer to the first subquestion on why flux is changing democracy, firstly, flux has observed a descend of national trust in Australian democratic government while society wants the transparency levels of government decision making to increase. Secondly, Flux founded a system of democracy that is theoretically superior to existing models because it answers more relevant questions to bias towards the creation of good policy.

6.2   How is Flux changing democratic government?

In order to understand correctly <u>how</u> Flux has chosen to go about creating better policy by changing the system of democratic government, I will now present part two of the case of Flux. Part two of chapter six will provide information on the practical aspects of how Flux is changing democracy, and focuses on how their proposal for a new democratic political model will be rolled out. This information will be supplied by first explaining IBDD and the three step plan in which IBDD will be ruled out in the political party in chapter 6.2.1, in chapter   6.2.2 I will explain the process of implementing IBDD in Australian democratic government and chapter 6.2.3 will provide information on why blockchain technology has made this new model of democratic government possible and we will continue by explaining why blockchain based I-voting provided the foundation for this system of democracy in chapter 6.3.

6.2.1   Issue Based Direct Democracy

According to Flux, there is a fatal flaw in democratic systems trying to decide upon who should rule, since the essence of democratic governance should be the formation of good policy. The task of redefining democracy requires dealing with the problem of authority in a way that no democratic model has successfully executed before, by asking different questions. This different ideology has been embodied in the system of democracy called Issue Based Direct Democracy. IBDD consists of three aspects that have been divided into the aspect of (1) direct democracy, (2) vote delegation and (3) the reorganisation of political power. We will now explain these aspects of IBDD more thoroughly with the use of the white papers published by Kaye and Spataro (2017).

1.0) *Direct democracy* - The first aspect of IBDD is taken from athenian direct democracy, where for each single issue a vote is distributed to each voter. As stated in our literary review on the institutional framework, direct democracy is barely being used in current day democratic government, because (1) communities are believed to be to big for direct democracy to effectively tae place, (2) the costs of elections with current methods are high and payed for by the taxpayers ; (3) most people are not knowledgeable about most issues ; (4) minorities will have difficulties with passing laws that only concern them, since they need the majority of the electorate to agree with the creation of their policy.

All four of these issues have been addressed by Flux, through implementation of blockchain based I-voting, vote delegation, the trading of votes and open source issue creation. It is important to note that while although an evolution of direct democracy might be able to bring good policy, this does not mean that all versions of direct democracy produce good policy. While empowering every voter with direct access to decision making power is important, this is not sufficient to bias democratic decision making toward the creation of good policy. Direct democracy might be useful for small highly aligned groups, but is insufficient for large complex societies.

2.0) *Vote delegation* - The second aspect of IBDD is vote delegation. Just like in liquid democracy, the delegation of votes is included into the system to allow for people to specialise in particular aspects of policy, while on the other hand it reduces the human labour costs of participation. Voters will have the ability to delegate their vote to anybody else, meaning that every voter will be able to find a delegate their vote to someone whose political views are alike. Sadly, implementing delegation with a direct democratic model does not stop blocs from forming, and it does not bias towards the creation of good policy.

3.1) Trading votes - The last aspect of IBDD is the ability of voters to reorganise political power by trading votes. Due to the incredible diversity of issues being voted upon in democratic government, on several occasions voters might not have a strong opinion on the issue. For each issue, a voter gets a liquidity token with which they can vote on the issue being passed or not. When abstaining their vote on issues that they don't really care about, members will automatically be exchanging their vote/liquidity token for political power tokens, which are tokens that represent your political power in numerical terms. Political power tokens can then be used in order to table issues. The exact number of political power tokens you receive is based on supply and demand, created by the interest society has in that specific issue since not every issue is equal. This concept will be discussed in further detail in part 3.2 of this chapter. Reallocation of votes is carried out automatically without the intervention of any voters, to prevent blocks from forming and ultimately create a system that biases towards the optimal reorganisation of political power.

The reason for using vote trading to reorganise political power is to (1) encourage voters to participate only in issues they really care about. (2) Understand that high levels of specialisation in our society have led to the ability of some being better then other in making decisions in certain policy areas. Allowing the brightest ideas to rise to the surface, by letting specialists in a field provide policy guidance, instead of letting representative generalists make decisions in the name of the rest of society. (3) Furthermore, since IBDD is attaching generic political value to each vote, its is in the best interest of voters to reorganise their personal voting power to match their interests. This prevents situations where the minority needs permission from the majority in order to change a piece of legislation, while it might not affect the majority at all, thus putting them in the position to potentially hijack the alteration of this piece of legislation in order to act as leverage for another issue.

IBDD creates a negative feedback loop for parties in all groups who introduce bad legislation. In this model, when low impact problems are identified it will be easy for people make changes to those issues without needing large amounts of public support. At the same time, because you still have to acquire enough votes in favour of your legislation change, when you are proposing is radically negative policy, it will still be very hard to get across. The model is put together so that it is very easy to make good changes, while it is still difficult to make bad changes. In the words of Nathan Spataro (2017);

"*IBDD takes the leverage component out and makes everybody act in their own interest, instead of political groups making deals and using leverage against each other behind the scenes. Which means that people start making decisions based on the likelihood that those policies will (A) continue to exist and persevere, so you are not spending your political power on lost causes and (B) that people actually believe in those policies, because you have nobody else telling you how to form your policy decisions anymore. There are no more political parties and there is no leverage.*

3.2)   *Issue Creation* - In IBDD, you can sacrifice voting power for the right to create issues. These issues can be created with the use of political power tokens. There are two separate values: one is your liquidity token, which is used to vote on issues and the other is a political power token that represents in numerical terms your political power to create issues. When an issue is created, each member will get a vote, and this voter can choose to (1) vote, (2) delegate or (3) abstain. When a voter abstains, they accumulate political power tokens. On the one hand, this creates the incentive for people to vote to have a say on the issue, while on the other hand, by abstaining you can gather liquidity tokens usable to bring issues to light that you find important. The barrier of entry is high enough that people cant spam the system with nonsense, but low enough that any organised group of people could table issues themselves independently. Important to note is that not all political issues are created equal, and thus people will receive liquidity tokens for abstaining their vote according to the market value of that issue.

Flux believes that the prosperity of western society over the last centuries has been intrinsically linked to specialisation, our democratic system needs to make the best use of the available knowledge held by its electorate (Kaye and Spataro, 2017). The old saying; "None of us is smarter than all of us", falls in line with Joy's management law, stating that we should make optimal use of our societal intellectual resources by creating an infrastructure where good ideas can easily rise to the surface (Park, 2015).

Now that the previous section has provided clarity on how IBDD works, the following section will provide the second part of the answer by explaining how IBDD will be implemented in government.

6.2.2 Implementation of IBDD In Democratic Government

Flux wanted to implement a new system of democratic governance, but they recognised soon that this would be a difficult process. Lobbying for government to make changes in their organisation that would end up in a lot of its employees loosing their jobs, seemed not to be the best way to go. Implementing such a complicated political system into an existing democratic government is not without its hiccups. The issue in the current political system is that even if that there was complete certainty that a different system would be objectively better in democratically governing a country, there is this terrible equilibrium where the people who could chose to improve the democratic system, are the ones handing in their resignation when signing the documents to change this system.

Rolling out issue based democracy will be carried out in a tiered manner, sequentially following the three aspects of IBDD mentioned in the previous chapter. Along the way of implementing the IBDD system in the political decision making model of Flux, it will visit direct democracy and liquid democracy as a decision making system to set themselves up for having sensible defaults for people's delegation. This allows Flux to maintain a necessary core of decision makers, and prevent from people coming in to the system to early on and gathering large amounts of power at an early stage.

Therefore, they started their own political party, since all you need to start your own political party in Australia is a small amount of members that believe in your ideology and are willing to join your organisation. They didn't need anyones permission to create a political party. If they get elected, as long as Flux receives the necessary votes, they can follow whatever ideology they want. In this political party, flux will use IBDD internally to handle the decision making process of how to vote on policies, and the elected parliamentarians will vote according to their constituency. This way, they

can safely test their political system. If they choose to run their party in a way where they let people vote directly on the creation of policy, that is entirely up to them. As stated by Nathan Spataro (2017);

"Implementing IBDD in government by starting our own political party is the easiest, most peaceful and safest way to start something of which we think that it is going to fix the world. Its like this: If this system is going to work it will grow, and if its not going to work, this movement will go away and we will disappear. We will be a footnote in history and that will be that. But if we are right about the theory, then it is hopefully going to change the world for the better."

There are two reasons why IBDD is not currently being used in the Flux political party. The First reason is because their strong philosophy and theoretical side involved, they want to make sure that at least until they are an established party with a large number of members they can adapt. Letting people come in with too much power, too soon might lead the organisation heading in different directions and not being highly aligned anymore. Having to make practical changes to improve the system is quicker without the need for a consensus to be reached by all the members. The second reason is that Flux at the moment has a total amount of 6.500 members who are a part of their movement. This is a decent amount of people, but the IBDD system was designed to be working with a massive ecosystem of policy and not in an organisation that isn't completely alined. So its not a right user case for deciding how to run a business project necessarily, but it is a great use case for a city of ten thousand people and deciding on regular municipal matters. The reason for this is because you have a wide degree of issues, and there is a population that is only interested in a small percentage of those issues. Theoretically speaking, once you get to a reasonably large democracy where thousands of pieces of legislation are being processed each year, most people aren't going to care for most of these issues. That is why IBDD lets people self organise into the groups where they can be most beneficial to the country.

To summarise the answer to subquestion two, Flux is changing democratic government by implementing IBDD in government in three steps: in step (1), they will start making use of direct democracy to let their members vote on the creation of policy directly and act accordingly, in step (2), Flux will implement vote delegation, where their members can delegate their votes to other members of the party, and in step 3, Flux will start allowing the creation of issues and the trading of votes. The actual implementation in government will be carried out through the use of their political party, since this is the easiest and safest way for this democratic system to peacefully gain recognition and grow.

This chapter has now provided a section that answered subquestion two. Together with the previously reviewed literature and the answering of both subquestion, this thesis has gathered all the information needed to answer the main question of this research. Now that Flux has distinguished a need for certain groups in society and designed a democratic system that is equipped with tools to bias towards the creation of good policy, the only thing that was needed was a technology that would provide the foundation for this movement Flux envisions a solution to the current problems of the system of democratic government currently in place, but in order for IBDD to be feasible it needs a technological foundation. A platform on which the electorate can safely (1) vote on a distributed digital platform, (2) delegate votes to other members of the electorate, (3) reorganise votes by abstaining and (4) effectively make use of Joy's law by suppling a open innovation system for democratic government. This technological foundation will be discussed in the last section of the analysis, in chapter 6.3.

6.3   The Societal Use of Blockchain Based I-voting in Democratic Governance

Now that the case study has been analysed and the two subquestions have been answered, the next step of this thesis is to answer my main question. With the help of the previously reviewed literature on both the institutional- and the organisational level, this thesis will now try to answer the main research question that states: "What is the societal use of blockchain based I-voting in democratic government?"

With my research question in mind, this thesis set out to create an extensive literary research that resulted in some useful insights. There is consensus in the field from researchers such as Davidson, Filippi and Potts, Atzori and Swan that there is still very little information available regarding the societal use of blockchain based I-voting in democratic government, and how it influences government on an organisational- and institutional-level. Even though the literature on the institutional- and organisational-framework surrounding the main question has been a fundamental element of understanding the concept of blockchain based I-voting, the lack of literature on the present-day status on the development of this technology made it difficult to gain the needed insights in order to properly cary out my empirical research. The absence of existing information on the subject confirmed the necessity of this research.

From an organisational level, implementing blockchain based I-voting will safe the government from tax income it has to spend on not only elections, but also, it creates a pathway through which organisational innovation can take place that removes layers of costly bureaucracy from government. As stated earlier in this thesis, blockchain technology can have a profoundly positive

effect on diminishing organisational costs of governing society, by overcoming bureaucratic barriers (Swan, 2015 ; Tapscott and Tapscott, 2016).

In my interview with Max Kaye, we discussed something called the second layer blockchain. This is based around the idea that instead of sending the digital votes directly through an existing blockchain, which would would cost a lot of computing power and money for every transaction on the Bitcoin or Ethereum network, they would anchor the data of the votes to a second layer blockchain. As states by Max Kaye (2017):

"That means we essentially have an unlimited storage space that we can use. Basically we can anchor data to the Bitcoin or Ethereum blockchain in this way and built it a second layer solution that we control absolutely. So it doesn't have the size restrictions that other blockchains have, we can make it fee free, so we can run an entire election for only dollars in terms of anchoring that data to the ethereum blockchain. So we think this is a much better solution and we think it provides us with way more flexibility going forward. To both upgrade and implement new things, control the security, the performance and the reliability."

When looking at how the organisational level is influencing the institutional level, we can see from our case a real life representation of institutional work, where the actions of an organisation are changing existing institutions. In line with the concept propose by north (1990), when organisations innovate, they alter institutions. When blockchain based I-voting is implemented in government, it will provide an understructure on which democracy can institutionally evolve. This also follows the views of the rational choice model on which public choice theory is build, and causing continual actions that reproduce institutions to take place, as well as carrying out actions purposely designed to alter these institutions (Lawrence, Suddaby and Leca, 2010).

The societal use of blockchain based I-voting in democratic voting is to create a foundation on which democracy can, institutionally and organisationally evolve into an improved version of democratic government. Organisationally, blockchain based I-voting (1) will safe the government and tax payers large amounts of money when elections do need to take place, being in a representative-, direct-, liquid- or Issue Based Direct Democracy. (2) It brings transparency, making fraudulent behaviour more difficult through providing temper proof voting, leading to trust, which is one of the foundational pillars of government. Making use of blockchain in governance would move control and power away from central elites and redistribute it between society, making the system more open, more effective and possibly more democratic. Lastly (3) it creates the possibility to finally make effective use of the most valuable resources society has to offer, knowledge. By making use of blockchain technology to provide the necessary information, it is possible to enforce rules, monitor participants and create effective feedback loops on a much larger scale then what used to be feasible. Issues that used to exist according to the Ostrom (1990) model, such as

scalability, the free rider problem and the tragedy of commons can be addressed by the transparent distributed nature of blockchain technology. Therefore, blockchain based I-voting can become the understructure of improved models of democratic governance, by being more in line with present-day society.

This general purpose technology in the making has the ability to takes one of the core operating costs of society, the creation, maintenance and compliance with rule structures, and it offers the possibility of automating these bureaucratic tasks through making use of blockchain technology in democratic government. Furthermore, it is able to provide a foundation on which improved models of democratic governance can prosper, by trust and transparency being embedded into the system. The societal use of saving costs and providing a foundation for better models of democracy, is that it makes it possible to entirely restructure the manner in which individuals and communities communicate with politics, business and society as a whole. In the words of Dahl *(1989)*; *"If we wish to maximise autonomy, our only reasonable and responsible choice is to seek the best possible state",* and this improved system provides society with better tools to develop that state.

Now that the main question of my thesis has been answered, I will continue in the next chapter by acknowledging the limitations of this research.

7   Discussion

There are several areas of this research that are up for discussion. The purpose of this section is to bring up these areas of discussion to describe what was already known about the subject of this thesis, and to explain new insights and understandings that have come from my research. This section will only address points of future research shortly, since these will be handled in more detail in the concluding chapter 8.2, after the concluding remarks.

It is important to look at the results of this research with a humble view. Although there is compelling evidence to support the presented results, there are limitations to this research and the manner in which it was executed. The first area of my research that could be up for discussion is literature used that was used throughout my thesis. The lack of existing literature on the relationship between blockchain technology and democratic government provided me with an opportunity, but it also left this thesis without academic sources to confirm the validity of my research outcomes. In other words, I was unable to discover significant academic articles that would confirm or falsify the results of this thesis. As researchers in the field have indicated, there exists a need for new literary research on the topic of the use of blockchain technology in democratic governance, and this thesis aims to assist in overcoming this knowledge gap.

The second area of my research that is up for discussion is the use of generalisation, by only making use of a single case study. There was a lack of other possible case companies to study, which would further increase the validity validity of my research. This should not represent to big of an issue, since, as previously stated, numerous academics claim that generalisation from a single case study is possible to a certain extent (Evers and Wu, 2006; Tsang, 2013; Flyvbjerg, 2006)

A third area of my research that is open for discussion is the use of public choice theory. This theory is founded upon the rational choice model, which has been receiving some strong criticisms from the field of political science. The reason for criticism is due to its assumption that voters, even without perfect information, are likely to make decisions based on rational calculations involved in maximising their economic interests. When voters are analysed closely, it is found that voting choice is less related to a persons individual economic circumstances, and more to psychological factors related to framing used in the elections (Caplan, 2008).

A fourth are of my research that is up for discussion is the relationship between XO1 and Flux. Since the political party and the startup share the same founders, there are conflicts of interest that might arise in the future. The idea of XO1 is to deliver the voting software for free for political

parties that want to run their party with a similar vision to flux, and commercialise on other industries that want to use this software for voting within a company. XO1 has shareholders that would like to see a return on investment at one point. In the case that it turns out to be more difficult than expected to find customers for this XO1, the shareholders could putt pressure on the company to start charging its non-paying customers, since the voting software is an essential crux of the political system of Flux. The issue of XO1 having investors might lead to a conflict of interests between the one politically- and one economically-driven organisation. This issue was also presented by Atzori (2015), who stated that;

"While the blockchain was originally created to eliminate the need of a third party in transactions, the paradox is that stakeholders now involved in blockchain governance play the classical role of tertius gaudens (Simmel 1908; Portinaro, 1986), a "rejoicing third" that attains economic benefits by replacing the State in some or all its functions; even worse, these agents may also intentionally pursue a strategy of divide et impera (divide and rule) between civil society and State, aimed to undermine the traditional democratic order, modify the existing balance of power and achieve a dominant position in society."

"In a world increasingly reliant on technology and ruled by networks, whoever owns and controls these platforms will always have a significant power over civil society on a global scale. "

When I confronted Nathan Spataro (2017), one of the co-founders of Flux specifically with this issue in an interview, he answered by stating:

"So, technically that is true, but when you are building a voting system that is completely transparent, you can't manipulate the voting system because you have a decentralised blockchain based voting system that has been designed specifically to avoid that problem. And secondly, if we did decide that we would want to vote in our own way and not vote according to the voters interest anymore, we couldn't survive. We are really confined in terms of how we could misuse power, because any miss use of power would destroy the organisation."

Now that the discussion section of this thesis has been presented, the last chapter in which findings and further perspectives will be provided

8   Findings on Further Perspectives

This section is going to present the last word on the issues raised in this thesis. This final chapter will first present the conclusion of this research in chapter 8.1, and finalises this thesis by recommending new areas for future research in chapter 8.2.

8.1   Conclusion

The conclusion of my main research question; *"What is the societal use of blockchain based I-voting in democratic government?"* has an answer that consists of numerous parts**.** When probing the existing literature, we concluded that there was no general consensus regarding this matter. Therefore, I made use of a case study on to provide us with new insights the main topic of this thesis.

My main observation throughout this research is that blockchain based I-voting is a foundational cornerstone to institutionally and organisationally improve upon the existing democratic government. The societal use of this, other than the government saving costs on elections, is that implementing blockchain based I-voting by democratic government makes it achievable for peoples voices to be heard more regularly, while costing less effort due to digitisation. This general purpose technology makes it possible to entirely restructure the manner in which individuals and communities communicate with politics, Whether using blockchain based I-voting to make peoples voices heard by organising referendums more frequently, which possibly makes government more democratic, or by using it as a foundational block to build a communication tool on, that allows for ordinary citizens to communicate policy ideas through open innovation platforms established on this same technology. It was necessary for this research to answer subquestions on both 'why' and 'how' Flux is changing democratic government, in order to thoroughly grasp the implications of using this specific technology to improve upon democracy.

This research attempts to fill a part of the knowledge gap that was previously mentioned in regards to the societal use of blockchain technology in democratic government, specifically focussing on blockchain based I-voting. The importance of these findings will become visible over the next few years, when we will be able to observe wether blockchain based I-voting has been implemented in democratic governance, and the manner in which this will change the relationship between society and politics. By reducing the operational costs of running a government, increasing levels of societal trust in government by offering higher levels of transparency and creating an Increased possibility for valuable interaction with society, this technology is likely to have a positive effect on the relationship between society and its government.

The global trend of a declining trust in government is likely to continue when no counter measures are taken, but blockchain based I-voting and other applications (I.e. decentralised blockchain services such as blockchain ID cards, digital health record storage, blockchain health notary) could be the start of a government that is more transparent and trustworthy, resulting in a more legitimate, sustainable and democratic political system.

8.2   Further Perspectives

After concluding upon the main findings of this research, this section will now present the reader with possible directions for further research related to the topic of this thesis.

This research field would benefit from it when a research would be carried out on the phase that comes after blockchain based I-voting has been thoroughly introduced in government in a national level to be able to analyse the actual affects this is having on the relationship between society and democratic governance.

Another possibility for future research that is likely to improve the academic field of the relationship between blockchain technology and democratic governance, which becomes more feasible through the use of blockchain based I-voting, are distributed innovation systems for democratic governance. By using blockchain based I-voting systems, it becomes possible for everyday citizens to communicate policy ideas with government, that might positively influence policy creation and safely vote on these ideas.

A research topic that would offer an expanded way of thinking about the research problem is by focussing on the the effect the implementation of blockchain technology in governance would have on the power structures within society. When taking a phonetic research approach on this topic, not only the academic field, but society as a whole could benefit from more research on this topic.

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Appendices

Short introduction where we are trying to figure out the best way of communicating, since the maximum available speed of the internet connection in Australia is still quite poor.

Max: Anyway, so yeah, I guess, I was thinking about this just before the call, I guess mostly what we will be talking about, will we be talking mostly about your masters thesis and questions relating to that?

Jeffrey: Yeah, but I also just wanted to understand what your organisation is actually currently doing and what the future plans are. And also how I can help you out with those plans if I can in any way.

Max: Oh, yeah yeah sure! So, I guess I will give you the brief overview to begin with.

Jeffrey: Perfect.

Max: Ehm, so. We thought we knew a lot of the problems of the previous ways of doing democracy. So, your typical representative democracy and that sort of thing, and in 2015 we started to develop a new model which at that stage relied on a form of timesharing senate sheets. That is about how it began. And than, because of our peculiar voting system here, called **group voting tickets**, which is a preferential system, but because often the list of preferences would be 150 people long, we came up with a shortcut, which was that the parties would decide the preferences and you would choose the party you would support. And so, that then introduced allot of game theory for parties, in terms of who they would preference and in what order to increase their chance of getting elected.

So that was quite good at producing diversity in the last senate seat for each state that we selected, and we had this idea that we would get the minor parties together in sort of like a bit of a group, and essentially timeshare senate seats based on which issues where coming up, sorry that's my cat in the background there, which issues where coming up and they were interested in.

Anyway, as this evolved, two things happened. The first is that we realised that we could develop into something allot more concrete now in terms of what it looks like, and secondly, the laws on the voting system we use where changed to remove group voting tickets. So, this killed our last idea, but we think we came up with a better solution. And so, where we are at now is we've created this new way of doing democracy called **Issue Based Direct Democracy (IBDD),** that works around the idea of people participating in the issues that they really care about and not participating in the other issues, and we predict that overal this is going to have a fantastic effect for people of any democracy that adopts it, such that thing like the minority wouldn't need permission of the majority in order to change something. So that probably illustrates the effects of this ……

But it also starts to produce negative feedback loops for parties and all groups who try to introduce bad legislation. So legislation that unfairly prosecutes one group, or legislation that isn't based on good explanations, or things like that. So we think that essentially we have found the reason for why democracy has gone wrong and therefore we've created this new system, and flux is the vehicle to get this into various parliaments around the world, in the same way the net party in Argentina, or democracy OS, wants to get representatives elected by using direct or liquid democracy.

Jeffrey: Okay, interesting! But there is a difference between the Flux Party, so the political party that you've created, and the flux organisation, right?

Max: Yeah, so uhm, well there are a number of organisations that are in the ecosystem that we've created so far. We've got a number of political parties registered in Australia so that we've got one federal part and two state parties, and than we've also just registered another party, because what we're working on at the moment, of which the name is … because that is basically the way that we can coordinate both domestic and international affairs, and keep the machine rolling.

Jeffrey: Sorry you distorted a bit there, what was the name of the party you just talked about?

Max: Ow, so the **Flux Foundation.** So we've set up, something called a company limited by guarantee, and basically allot of not for profits are set up like this in Australia, and I think it is a bit similar to the model that is used in Switzerland, where not for profits have to ste out their aims right at the beginning and then they are held to account according to those aims. And so, when we set up the Flux foundation we had something called objects, but basically a list of goals, and they define what an organisation is for and what it is allowed to do and if we go and brake those rules, than essentially it is a federal crime essentially, or at least, corporations act comes in and things like that.

So we've set up the Flux foundation as the not for profit that helps coordinate all the political parties. So these are the first two elements of the ecosystem. The third element of the ecosystem is a startup that Nathan and I founded called **XO1,** and that is created essentially to give us a way to create the voting software that we need for Flux.

It also, the idea is to produce secure voting software and commercialise that. Flux gets the benefit of being able to use it (for free) and other groups like. So essentially it will be free for direct democracy like groups around the world to use. And that startup is then producing the software, and this is also what is taking up most of our time at the moment. Which is why we are busy of getting through a fundraising round and then things will loosen up a bit.

Jeffrey: Its a fascinating story already, but why have you chosen for your own form of democracy and didn't for a liquid democracy such as what is being used in Argentina?

Max: Ehm so, at the end of the day, we don't think liquid democracy actually works to do what it says it does. We draw a number of theories together. From the political side, have you heard of something called **The Selectorate theory of power?**

Jeffrey: I've done a bachelor in Business Administration and a masters in organisational innovation & entrepreneurship, so i'm a bit in over my head but i'm fascinated and eager to learn about all of it so please explain?

Max: Okay cool. So the electorate theory of power is something that I only learned about in October, so its quite recent in the Flux story, but it illustrates the point quite well. And that is that Selectorate theory looks at the idea of that if you look at a leader or a ruler, what matters don't they really have a choice in, so how does power influence their decisions. So it starts from the point of that imagine you would just magically become the king of …, your first job is to stay the king, because if you turn out to be a really crap king, other people are going to remove you or there is going to be a revolution, so the first thing is you got to stay the ruler. Anyway, it build up this case by looking at the idea of how you control the treasury, and the idea of key supporters in society, whether that's other MP's or highly influential people and keeping everybody on side, so you can maintain to be the ruler, and the conclusion that it end up coming to is that corruption is a tool for staying in power.

The way that we interpret that is that we are not going to get rid of corruption unless you are getting rid of the source of it, and the source of that corruption is to do with **authority**, and so if in any sort of system you are granted authority, the that allows you to abuse that authority in order to acquire more authority or to keep that authority. And Unless you have a system that really has negative cycles against that, or negative feedback against that, then you are not going to be able to solve the core problem, because at the end of the day the core problem is that democracy is making mistakes which we don't know how to avoid. So we are making mistakes that we can avoid, because we already got that knowledge, instead of trying to make the mistakes we don't know how to avoid, which is part of progress. We can't come up with new solutions to new ideas without making mistakes, or new solutions to new problems without making mistakes, and so we wanna, at least from our point of view, the ideal democracy is not one that channels the will of the people through however people rationalise that should be channelled. But rather the ideal democracy is one that produces the most prosperity for its citizens, that makes the best decisions and brings the most economic benefit, security, etc. In order do that, we got to solve problems that we don't know how to solve yet, and that means that fundamentally the creation of new knowledge needs to be a very integral part of this new democracy system and we see liquid democracy as essentially, while I suspect that it will be marginally better than direct or representative democracy, in the scheme of things I don't think it is actually going to change much, because at the end of the day, you will end up with these very powerful, highly delegated individuals who will form political parties. Even though they will not be named political parties, they will essentially be a cooperative block that allows them to put through legislation and to exclude other people who they don't like.

And so, we observe that that happens in representative systems at the very least, and I've not heard any argument from any liquid democracy proponent that actually excludes that possibility. Rather I think its more from the point that it appeals to people from the point of view that they are not forced to pick a representative I don't agree with now. I can choose my own representative and that is where the appeal comes from, but the problem with that is that it doesn't actually do anything to **dilute the motivation to become the biggest group**. Which we see as essentially thats the optimum strategy in most democracies today is that if you're not the biggest group then you're the smallest group, which means you can't accomplish much, while if you're the biggest group, you can actually accomplish in parlement.

So that whole ecosystem of problems there, is what we set out to solve with issue based direct democracy. So I know that was a bit all over the place, but that's sort of the overview.

Jeffrey: And are there, cause the essence of this is also described in your white papers correct? The ones that you published this year?

Max: Yeah yeah, so the essence definitely is, we don't talk that much about the solution t here, but we give an introduction to the two parts, or the two theories that we think both identify the problem and how to solve it. Or at least the path we have to go down to solve it. And so yeah, on the one hand, one of those theories is the Selectorate theory which basically says corruption is a tool, and on the other hand we've got dodgy and Fallibilism (epistemology). Basically its an evolution of **Karl Poppers** theory about science and knowledge and stuff, that described knowledge in such a way that we can draw strong relationships between ….. knowledge and learn a lot about that so that we can remove authority.

So **Popperian fallibilism** is very **anti-authoritarian,** but it deals with authority very deeply because it claims that every other attempt of understanding knowledge is authoritarian. So all relies on authority in some degree.

Jeffrey: And are you using blockchain for this platform you've created?

Max: Ehm, yeah! I'm in the middle to late stages of getting us to an alpha at the moment, so I do most of the programming. And we are essentially building a scalability layer

that essentially allows us to run many instances of different democracies very cheaply and quickly. The idea is that basically we create a system that allows programmable democracy of all kinds. So, for the basis of a commercial product it means that we can run elections in traditional democratic scenarios, we can run elections in the newer / more radical scenarios, whether thats liquid democracy, IBDD, prediction markets, or anything else like that. Basically that gives us the tools we need to built any democratic system on top. Plus many many other systems, but we have a particular focus on democracy at the moment.

Jeffrey: And are you also planning to provide the voters on the platform a source of unbiased information, or should they get that information from somewhere else?

Max: So I think you've identified the problem in your sentence there an that is that I very firmly do not believe that information can be unbiased. To take it back one step, I would argue that objective truth exists in pretty much all aspects and that we can move towards objective truth. Which means that how theories and how our information is created, they are likely to be biased to, or we can develop a system to bias information that is closer to objective truth. The Idea of unbiased information is that I can claim that the seasons change by some kind of greek god to be unbiased information. We know its wrong, but only by judgements, logic and a whole suite of theories can I actually show that that's wrong. And so, I would argue that its not that we want unbiased information, its that we want information that is biased towards a complete truth. So that explains more the philosophical side.

The other side is that because we see authority as one of the key impediments to moving to a better democratic model, to introduce a default source of information like that would be like introducing authority again. So in fact we wouldn't be introducing **unbiased** information, but we would be would be introducing a biased form of information from one source (or perhaps a collection of sources but ultimately you could argue that whatever algorithm for selecting those sources will become the single source). So basically in that case we would still be providing biased information, we would still be having a position of authority in deciding that information and that doesn't completely solve the problem.

Basically, we are mostly interested in a system that gets rid of authority as much as can be. Now, that doesn't mean we are against providing a flow of information, or various explanations, theories and things like that, but I don't really see it as that big a deal since it doesn't get us that much, because IBDD embraces the idea of **specialisation** and once we embrace specialisation, the people who are already specialised in the matter wouldn't need the information. Because in fact thats why they are in the best position to make those decisions. So instead of trying to take information from one source, or a small group of sources that we've judged to be better than other sources, which would essentially make us a **technocracy**. Instead of doing that and trying to disseminate it to the people, we let the people decide upon what issues matter most to them and put their political capital into people who are going to really pursue those issues.

This can lead to two options: one is that people are already specialised and they have the knowledge, but two is that once someone actually really has a good capacity for change, being able to actually make a difference here, that in and of itself is a massive incentive to get educated and to know as much about the process or about the issue as possible, because that is a very high yield investment point. And so rather than trying to focus on giving information to people and all the traps that come along with that, we would much rather set up a system where people are **incentivised** to go and find their own information as well as possible, and to understand it as much as possible. I think that is far more valuable, to do **your own research**, as to reading a textbook, or a summary or another thing that has produced by somebody else. Anyway, that roughly sums up both the practical and philosophical side of why we aren't going down that road, or at least why we are not doing it early.

Jeffrey: Thats a very well thought out answer! Is this system already in place? You have joined the elections last year right?

Max: Yeah our first elections where in 2016

Jeffrey: So you already have a small case that you've built. How did you see the effects of this and did it go as planned?

Max: Issue based democracy has actually never been used. So we don't run the party via IBDD and basically that comes down to a few reasons. **(1)** One of them is because our strong philosophy and theoretical side involved, we want to make sure that at least until we are established we can adapt. If we let other people come in with too much power too soon, they might take us in different directions which could lead to our organisation being split on multiple fronts and we are not highly alined anymore, and that might be bad. **(2)** The second thing is that IBDD is designed to work in a massive ecosystem of policy, not in an organisation that isn't completely alined. So its not a right user case for deciding how to run a project necessarily, but it is a great use case for a city of ten thousand people and deciding on regular municipal matters, such as: Do we put a park here or should we upgrade the school? It will be a lot more useful there, because you have a wide degree of issues and you also have a population that is only interested in a small percentage of those issues.

And so we see that once you get to a reasonably large democracy that is definitely the case, especially when we are talking about hundreds or thousands of bits of legislation that is being based each year, most people aren't going to care for most of these issues. And thats when its better to essentially let people self organise into the groups where they can actually from their perspective do the most good.

Jeffrey: So does this mean that you are actually using a form of a liquid democracy right now?

Max: No not really. So we have run a view polls, votes and stuff like that, which is basically just direct democracy, and thats only inside the party. Our plans to role out issue based direct democracy, because its quite complex in the way it sets things up, we are probably going to go with a tiered approach where we role out direct democracy first, then we allow people to start delegating, and then we allow people to start reorganising, via trading votes. And so, we might visit liquid democracy along that path, and we might do something with liquid democracy for inside the party as well for party governance, because that way we can set ourselves up as having sensible defaults for people's delegation. Then we can maintain quite a good core of decision makers, even though its just a layer on top of the democracy.

So basically we are not that interested in liquid democracy, it might be useful for example when running companies. If it was a public company, and you had the proxy system of AGM's now it would be useful, but as soon as you start going into many different issues.

I mean its easy to imagine: say you had a population of roughly 5 parts, roughly equal size, than as soon as you get a vote on one of those things, there is one fifth that will be very interested, and the other four/ fifths don't care. At that point, you end up with the ability for other blocks to blockade or manipulate you, as is the case in normal democracy. This will mean that you end up again with having to become the biggest group. This is part of the problem that we see, which makes liquid democracy really not that attractive to us.

Jeffrey: And Do you believe in the **decentralisation** of government?

Max: Yes, but not absolutely. In terms of economics, I count myself as neoliberal, but every neoliberal decision that has come through government in Australia I disagree with because I think they have done it wrong.

And so, in the same way I believe in decentralising political power, and I think that we essentially have to become a larger civilisation, but at the same time I don't agree with decentralising as a must without a good explanation.

So I believe that the exact method in which we decentralise is very important, and so I believe that decentralisation is a good end goal, if we rushed to it without a real understanding of the consequences of it, and exactly how we are going to implement it, then we could end up with making a lot of mistakes we could've avoid, leading to us not achieving what we wanted in the first place. So its easy to consider a highly decentralised system of governance, that produces really stupid results.

An example of that would be every bit of legislation that comes through government, you select one voter at random, and they decide whether that bit of legislation passes or not. This would be highly decentralised, no one has permanent power, but at the same time there is no reason that would produce good results. Therefore, when we are considering the idea of decentralising political power, we need to be very clear at exactly what it is we want to accomplish. If we don't understand the problem well enough, it is easy to make a mistake in our predictions because our explanation was wrong. And so basically, the way that we are trying to do it as the Flux organisation, is that we fundamentally think that direct democracy and liquid democracy is a bad way to decentralise political power, because it is essentially an explanation less way of decentralisation. They start off with will of the people, go down some mere intuitive paths to arrive at this conclusion, but from our perspective we've got the **selectorate theory** which states a prediction that isn't in line with what proposers of liquid democracy are thinking what will happen. In fact, it predicts that we will end up with another pseudo government with less formal links between political fractions, but nonetheless, they should still arise.

From that point of view, the way that people are going around this task is not really giving enough weight to the explanations we have on how **political power** works. Furthermore, they give no consideration to how do we form good policy. That is not a consideration at all in liquid democracy, but in IBDD, the **formation of good policy** is at its core. Therefore, we've built a system around the idea of how to generate good policy. Decentralisation of politics and political power is just a symptom of this, as opposed to being designed around how to decentralise political power from the get go. That is why we think our system (IBDD) has allot of potential, while liquid democracy and direct democracy don't. So I hope that makes sense now.

Jeffrey: Definitely! And are you also making plans to role this out in other countries then Australia right now?

Max: Yeah, so we have a few groups forming. We've been in touch with a few people in Germany, there's someone in the UK, we started a group in New Zealand that stagnated and we have a group in the USA as well. And so we are definitely starting to roll it out, but the earliest stages are the hardest and especially trying to manage things and coordinate people from Australia is proving to be quite difficult. That is why we are trying to focus on in the near future getting the foundation up and running, and putting together good policies and documentation for people to actually start this on their own without needing to rely on us so much.

Jeffrey: And how many people are you working with right now?

Max: The organisation itself, I mean everybody is a volunteer at the moment, there are probably around a dozen people. Depending on how you count it, we have about eight to twelve people who have put in a lot of work in the past and have shown to be willing to put a lot of work in in the future. And the we have a much wider community of volunteers, who are the type of people that hand out flyers on election day and that sort of thing.

Jeffrey: Maybe I should describe a bit further what my plan is regarding my thesis and what I am planning to research. I wanted to focus on how government can learn from blockchain startups and the update government of society to the technological age.

Max: So i've thought a bit about this, cause we, on the commercial side, we are talking to the government from the innovation or the voting side of things, and I feel like part of the problem is to that to actually upgrade our systems of governance, a lot of people who currently have jobs won't have jobs anymore. And so we have this **terrible equilibrium** where to sign the documents saying lets update the system, would also be there resignation essentially. So for example if IBDD would replace parliament, then the people who are currently wouldn't have those jobs anymore, since we wouldn't have need for them. Meaning it would be more like community leaders talking to policy writers to try and put their ideas and explanations into a coherent policy that can pass through the system.

So, the same is true for a whole lot of organisations in terms of the service sector. If we were to move a lot of that online, many people who are decision makers in a political party, either their role would change substantially or they would be out of a job. And so I guess the problem is that this model of incentive isn't likely to change things up, unless you are a country like Estonia who is in constant threat of being invaded again, which mean that having everything online is very advantageous, but for most countries where political conditions are more secure, the implementation of this system actually weakens the power of government, or at least it **weakens the power of the decision makers** who are currently in government. So I don't see any logical reason for them to give this power up. Though someone higher up may do it to make their portfolio look better.

Jeffrey: But isn't that something that happens in most industries, that most big companies that actually grew too the position they are currently in by trying to be a **solution** to a **problem** but eventually they are the one to hold on to the existence of that problem, because otherwise they wouldn't have anything to do anymore.

Max: Oh absolutely, thinking from a very philosophical point of view, everything that was a solution eventually becomes a problem. Because eventually society grows that all the other… So its sort of like if there is a pressing problem we have right now and we implement some solution, and we know that that solution will cause problems in ten years time, but its not today and we have other pressing problems to deal with. And once we have dealt with all those other pressing problems, the old solution we came up with is now a new problem and we have to come up with a better solution. So I think that fundamentally that always happens, but I guess the thing is that I don't think that democracy is in the late stages of its transformation, I think it is in the very early stages and the problem is that the bigger the solution was last time, the harder it is to change because more things rely on it. And so the idea of fundamentally changing democracy into a better model, that is like a forty year project at best. The last time it happened it was centuries ago. So I think you are definitely right. We will have to come up with new solutions to these problems eventually, when they grow to be big enough, but yeah.

Jeffrey: So that was part of my research question really, and I'm trying to look at this whole change from quite a philosophical perspective. I don't know if you are aware of this social science research method called phronesis?

Max: No I don't think I've hear of it.

Jeffrey: Okay, so it was founded by Aristotle and it focusses on mechanisms of power. So if there is a certain development in society, so who gains and who loses and by which mechanisms of power? And I was just looking at this development that seems to be going on. To explain a bit further, The primary purpose of phronetic social science is not to develop theory, but to contribute to society's practical rationality in elucidating where we are, where we want to go, and

what is desirable according to diverse sets of values and interests. The goal of the phronetic approach is to add to society's capacity for value-rational deliberation and action.

I'm trying to take a philosophical approach to this all because I'm doing a social   science master and I know that I'm not likely to be going to create any concrete theory from performing these kinds of case studies, but it is a very interesting development that is going on and I'm trying to map out and see whether this development is positive or negative, and if we should steer it in anyway.

Max: Ahh, okay. Its curious as an idea! I'm trying to think about where I fall on the spectrum of opinion on the case. I have to do some more reading.

Jeffrey: Let me check, because I still have some questions written out. This one is more of a personal question: Do you feel like a democracy will eventually the optimal way of leading a society, or would philosophers do a better job at leading society?

Max: So, if we are talking about philosophers and the state of philosophy we are in today than that would be a grave error. I personally think that most philosophers aren't worth their salt in terms of their understanding of knowledge, and the problem is that if you don't understand knowledge very well, then you get into things like post modernism which is essentially just totalitarianism in a news flavour. So, fundamentally the problem with saying how do we do this sort of stuff and concluding upon that philosophers should rule us, so if you want dot go with Plato's idea of the **philosophers king**, the problem is that you still got authority there and other philosophers are going to be trying to take some authority and things like that, and getting into philosophy is then going to be a path to getting into power and so I don't think you would actually avoid any of the problems we are getting into now. We might create different problems, but fundamentally I don't think that handing the authority to decide what is right to any particular group of people, would be a good decision and it certainly in principle is no better to hand it to one group of people over an other group, unless you got a group where the ultimate goal is the destruction of all human life on earth, or something like that. In which case that would be very bad.

Basically, this question is… Have you read anything from Karl Popper?

Jeffrey: No, Karl Popper you said? How do I write this?

Max: So that's the philosophers name. So in 1960 he published a paper called **Knowledge without Authority,** and in this point in the paper he is discussing about who should rule and by what method should we choose rulers and things like that. Which fundamentally is at the heart of every democratic system, or any system of governance. So after talking about that he says; *This political question is wrongly put and the answers which it elicits are paradoxical. It should be replaced by a completely different question such as; how can we organise our political institutions so that bad and incompetent rulers can not do to much damage. I believe that only by changing our question this way, can we proceed to move towards a reasonable theory of political institutions. The question about the source of our knowledge can be replaced in a similar way.*

So at this point he is talking about, in terms of theory of knowledge you could ask the question; *What is the authoritative source of knowledge? It has been asked in the spirit of; what are the best sources of our knowledge, the most reliable, those that will not lead us into error, to which we can and must turn in case of doubt as the last order of appeal. I propose to assume instead that no such ideal sources exist, no more ideal rulers and that all sources are liable to lead into error at times. I propose to replace therefore the question of the sources of our knowledge by the entirely different question; how can we hope to detect and eliminate error?*
So yeah, thats the segment there, and I think that sort of sums it up when we answer the question; **Is Democracy the right way to go, we are essentially asking the question who should rule, but the problem is that its not that democracy is the right way to go or not, its; How do we instil the process of creating new means to solve our societal problems into some political**

system, and how do we then put safeguards around that political system to ensure that it doesn't do us damage, and that if it does, we can correct and either create a better system or something else.

And I think thats a much better way of looking at it, because instead of saying: okay, it will be better if we where ruled by philosophers, or this system of voting is better than that system of voting, It changes the frame of our reference that we actually think about the real purpose of what the real purpose of governance is. Which is, as living in a society, we have problems that arise of living close together, or co-inhabiting the planet earth, and how do we best come up with solutions to those problems. **And that is a far deeper and more interesting question I feel, because we are asking practical questions on how to solve problems, as opposed to less practical questions about who to choose to then solve our problems for us.**

And if we pick that latter argument and we are choosing someone to solve our problems, I mean, there is no reason they would be better at solving problems than the rest of us (society) combined. There is the old adage that: "None of us are smarter than all of us." And I think that basically what we can take from that is that if we do want to make a conclusion about the optimum way to organise ourselves to solve problems, then we basically need a way that includes everyone, because if we don't include everyone. the people who we exclude might come up with a good idea that we then don't adopt because we excluded them. And in that case, we are definitely sub optimal. Because we have now entered into a system where we don't adopt good solutions, because of some other decision about who should or should not rule.

On that note, I think the major take away is that everyone has to be able to be involved, and if someone ha a good idea they need to be able to have a path to get that into practise and get it to the next stage as easily as possible. And I don't think any of our current democratic systems have that. Like if you are a democrat in the US at the moment, than tough luck, you are not going to get anything passed. If you are a minor party anywhere in the world, than again, tough, you aren't going to get anything passed. And so right now, we have terribly sub-optimal solutions, because the idea of efficiency in this system is a government holding 51%, and doing as little as possible to win just enough to make sure it controls absolute power, and excluding the other 49% which means that we can't possibly have an optimal system.

And so, I think it is always a difficult question to answer, and I think that IBDD is a proposed solution that might solve the existing problems. I think it does allot better than all of the other systems such as direct democracy, or liquid democracy and the various flavours of representative democracy, because it engages with the real question; the idea of getting new knowledge, it engages with that question more deeply, while the other solutions, I mean in the worst case, in the case of direct democracy, if people are making bad decisions and we are ruled by the people in this regard, we don't actually have a way to get rid of it. And so we could put ourselves in a position where 60% of the people might take a strong disliking to the other 40%, and there is no way of us deciding that this is actually a terrible mistake, lets undo this quickly, because now that we have transitioned into a direct democracy, you need more than 50% of the people to agree with you.

So in some ways direct democracy and liquid democracy is actually, liquid democracy at least we have the idea of delegation; If the people we start delegating to start misbehaving we can remove that delegation. Thats good, but I still don't think its that great, and compared to a situation where, especially if we don't have any political reorganisation between groups. And so, those kinds of situations are much easier to arise under the old systems, and the reason is that the old system don't deal with the problem of knowledge and authority in the right way. They go on the authority side and choose the authority, as opposed to coming from the knowledge side and determining how we can eliminate error, how do we create new knowledge, how do we incentivise continuous creation of new knowledge and new ideas that actually solve our problems. So, a bit of a roundabout answer, cause I thought allot about that one.

Jeffrey: Still it feels like every answer you give is very well thought out so thank you for that. The concept you just described sounds a lot like open source democracy, by focussing on making sure the right policies rise to the surface.

Max: Yeah, so I guess that the idea of open source democracy is very fuzzy to me. It feels good, since open source is typically a situation where anyone can contribute, where you can eventually decide if there has been a mistake in a certain track, then you can go back to another track and steer away from these mistakes. The thing is that I have no idea on how you should implement this or what it would look like. Typical problems within open source communities are that usually they have a benevolent dictator for life, who gets to decide the direction of the project, which is often good since they were the person who started it and it was their vision, but that doesn't really translate well to democracy. There are ideas like **forking of software** and then start using a different client, which is great on a computer because there is no downside to that, but I don't know what that would look like in a democracy.. Do we create a little micro nation, because you don't like the laws of the last nation, and do you then lose access to all the healthcare and have to built your own hospitals?

So there are all of these questions that, I guess just because it is a fuzzy topic, I don't really know what open source democracy really looks like so its difficult to answer. But yeah, it's a good place to start.

Jeffrey: I think the difference between open source and crowdsourcing is essentially about ownership and who ends up being the owner of the created material. So crowdsourcing is for example what NASA did when they didn't have the funds anymore high hire the top notch researchers in the field so they created these **crowdsourcing** campaigns where they had certain issues on which they let participants send in their ideas and work together to create a solution. And **Open source** is more the getting together of a community and create material that will maintain to be free.

Max: I guess, the problem that I see with the idea of applying open source principles to democracy, is that it feels good in theory, but I suspect that as soon as you actually try to practise that it would go wrong. Understanding that we are the type of species where communism came really easily, with which I mean the true form of communism and not the implementations that have been tried from time to time, then maybe something like that would work. But if we are talking about an open source democracy, do we still have taxes? If we do have taxes, how do rich and poor people interact with that system? What happens when there are disagreements within that community? I mean a good example on that is bitcoin, where for the last 18 months there has been a raging debate about the block size, which has fractured the community in two, and it looks like it will lead to the more sensible side in the next few weeks or months, but it is still doing harm to the community.

The idea of open sourcing things, open source often comes along with the idea of **consensus,** of which people think that if we just take enough time to explain the details of a problem then everybody should come to the same conclusions. But I don't know how this would prove to work in practise. People might point to the idea of scientific consensus, but scientific consensus is something that takes years and years to build up, and more to the point, we don't want to mimic scientific consensus, because this is a result of overwhelming building of theories and stuff. Whereas if we are actually interested in solving problems as fast as possible, when we look at something like poverty, I feel that people who would want to solve poverty would want to do this as fast as possible. If we wait for consensus on the right solution there, I feel like we really are holding ourselves back from trying things and making mistakes and learning stuff. So I guess, I don't so open source as a Mecca of good governance, and I think that in a lot of cases it really backfires like in bitcoin.

Maybe I don't understand in detail what open source democracy entails, besides the idea of having software that runs democracy, and then you open source that. But at the end of the idea you need a coherent theory of how things would be run. Every system you create is going to have some sort of explanation backing it. Now there are these extreme cases of liquid democracy and direct democracy, where they claim not to have an explanation. In practise this means that they do have an explanation but its just a really terrible one, because they deny the ability to criticise it, so they can make up any explanation which ever explanation is "intuitive" to back it up. We run the risk of doing the same thing in this open source democracy where we would either claim that there isn't an explanation, or we would have trouble agreeing on would the correct explanation of governance, or how to run the enterprise of governance, what that explanation is. So, if we disagree on those, because in the actual open source world when that happens either the software is forked, or in the case of bitcoin, the network might be forked. Or Actually, Ethereum is a good case because when the DOA hard fork happened about a year ago they did actually split up in Ethereum Classic and Ethereum Main. If that is the solution with open source democracy, considering democracy is not highly aligned, and these other projects are highly aligned, then we would just be forking all over the place.

In short, without an actual explanation to respond to it is difficult to actually judge open source democracy because it has all of these hesitancies, but at the same time if someone came forward with an explanation on how we should do democracy and it really fits with the idea of what we are doing, we us the phrase open source democracy and it fits with that ethos. If this explanation would resist to criticism, is hard to vary, and all the other things required for a good explanation than sweet! That would be awesome! I am not saying that I don't believe something like that could happen, but I'm definitely very skeptical from the get-go.

Jeffrey: Okay cool, lets go back to the software of Flux. Are you building platform on blockchain, or are you lifting on Ethereum, or another blockchain?

Max: Ehm so, we are not creating a custom first layer blockchain, because I fundamentally believe that would be a very bad move in terms of security. So to give you an idea of my background by the way, I got into bitcoin in late 2010, and then for about four months in 2014 I was on the Ethereum development community/team. Definitely, I've seen Ethereum at a very early stage, and one of the reasons I've left Ethereum is because I had some differences in opinion with their design choices, which I thought would fundamentally hold the project back and as it turns out, some of those are now emerging as real things that people are complaining about. One of them particularly, in our development timeline, we did a stress test on the bitcoin network where we showed that we could comfortably process about 1.5 billion votes in 24 hours. Then, basically the product we wanted to build on top of that we budgeted that it would take about 1.5 million Australian dollars to make. And so we were looking for a cheaper alternative, so we started building something based on smart contracts on Ethereum, but ironically some of the design decisions I argued against in 2014 started to come and bite us in the ass.

So fore example, you can't pay for someone else's transaction on the ethereum network, which mean that for us as the provider of this service, your app would need to generate an ethereum key for user and we need to send them money, and then they need to vote with that money. But that opens us up to all kinds of attacks, because essentially we have to send out money to people for free. Their were a bunch of other design applications as well, and so it became obvious that it wasn't going to work and additionally the fee situation with ethereum. We could've ended up in s situation where we didn't have a new product and the fees of ethereum were so high that we were boring 50.000 dollars of Ether, just in transaction fees every month, which of course if very bad for us.

So basically, the solution we came to is building a scalability layer on top of Ethereum at the moment, which is very similar, but a lighter version of the one we wanted to build on top of Bitcoin. **This scalability layer is blockchain agnostic,** which means that it doesn't care what blockchain it runs on. Basically, we have engineered a system which has a much higher capacity than

Ethereum, while still having the benefits of the dense ecosystem of ethereum, such as the smart contract interaction. By hosting it on this second layer, it actually gives us a lot more control. For about the last 18 months, my view has been that second layer solutions will be the longterm solution to blockchain tech. As in people will be building second layer solutions instead of creating native blockchains, and so in the end very view people who are using ethereum for its smart contract qualities. The mean reason of using Ethereum over bitcoin at the moment is that Ethereum has a much shorter block time. There is no reason bitcoin could't do this as well, but members of the community are stubborn.

I don't think that Ethereum will have a long life in doing what it intends to do, because the much better solution to everybody long term will be to use a scalability layer. With the right tech you can form an information … between different scalability layers. What we are going to do is run a second layer blockchain over ethereum, but if someone else runs a second layer blockchain over ethereum, we can configure them so that they can talk to each other. At that point, you have pretty much all of the benefits of smart contracts, except that you can't speak to arbitrary blockchains and **arbitrary blockchains can't speak to you, which is actually very useful from a security point of view.** I guess, all this hype about Ethereum, I really don't see this playing out.

Jeffrey: Okay, and I guess I will research this for myself because I'm new to the scalability layer.

Max: So, there is no precursor yet to what we are doing. This will be based on one that i am aware of that works at least in this way, but basically, you are familiar with the idea of hashing and stuff are you?

Jeffrey: Yes, I now how hashing works.

Max: Okay cool, so basically we record the hashes of vote sand other things inside the Ethereum blockchain and then our programme scans the Ethereum blockchain and reassembles the larger blockchain (it might not be larger for a long time) or second layer blockchain on top. And so that lets us for a very cheap cost initially, we can hash up 10 megabytes of data and put it on one 32 bit hash on the ethereum blockchain. That means we essentially have an unlimited storage space that we can use. There are some other economic incentives, and we have to make sure that everything works, but basically we can anchor data to the Bitcoin or Ethereum blockchain in this way and built it a second layer solution that we control absolutely. So it doesn't have the size restrictions that other blockchains have, we can make it fee free, so we can run an entire election for only dollars in terms of anchoring that data to the ethereum blockchain. So we think this is a much better solution and we think it provides us with way more flexibility going forward. To both upgrade and implement new things, control the security, the performance and the reliability.

Jeffrey: It's a fascinating solution, is there any place where I can get more explanation on this?

Max: Well not really, I am combining a few key aspects from things I have designed in the past or projects I have been working on. So if you do want to learn more about this sorta stuff, there are no real solutions yet. We are going to release an early version in about a month, depending on how far the software has come along. Basically, if you want to look up some of this stuff, search for **Anchoring data to a blockchain**. I don't know if your google **second layer blockchain** if anything would come up at the moment.

There is a lot of talk about second layer networks, which are similar, but not always the same. So, the most talked about second layer network is the lighting network for Bitcoin, which basically enables you to set up whats called a payment channel between people. If you set this up in hub and spoke style models then you can create a path between any two points and it lets you basically commit to sending funds to someone, without actually reconciling it against the

blockchain yet. You can do this in a trusted manner, in a way that you can emulate hundreds of thousands of payments that are reconciled in one bitcoin transaction. So there is this idea of second layer networks which allow users or apps to do a lot more, with a lot less space on the blockchain. The point is that you have to design these second layer blockchains to be specific, so you don't end up designing another blockchain, and so its is difficult to design a second layer that is general without recreating a blockchain. So if you google second layers on a blockchain, you are likely to hear about lightning networks, the radon network and state channels, which are good but they don't provide everything you necessarily want. But in terms of the second layer that we are creating, there has't been anything published about that yet. Hopefully soon.

Jeffrey: Which means I can probably not go into this topic in my thesis.

Max: Yeah I mean, I don't think you can get a lot talking about these second layers from a philosophical or conceptual point of view, if you just threat ethereum like it is unbounded and you can make it do anything you want it do do, you essentially have the same sort of solution. So in practicality, ethereum has limits but if you just presume that ethereum has infinite possibilities, while maintaining the same security features it has now, you basically emulate the same environment. If we could store gigabytes of data on the ethereum blockchain and do it for hundred of dollars instead of hundreds of thousands of dollars, we wouldn't necessarily be doing what we are doing now.

Jeffrey: I think I have asked all my questions regarding the thesis for the moment. I need to dive into the the theories and technicalities of what you have described to me here before I can properly continue with this interview. In the meantime, is there anything I can do for you regarding the development of your organisation?

Max: I guess that depends on the sort of stuff that you want to do.

From here on, we talked about some personal stuff and how I could help the company go forward in the future by offering the skills I have learned over the past few years in my educational and professional endeavours, and set a date for the second interview.

Appendix 2:   Interview With Nathan Spataro   (11 / 08 / 2017)

Short introduction and figuring out the most effective way to communicate over Skype.

Jeffrey: So, Thank you for meeting with me today.

Nathan: No No, Pleasure and thank you for reaching out. I'm so sorry, I've actually haven't had time to talk with max about the chat that you guys have had, cause at the moment so much is going on, but yeah look, if you want to start by letting me know a bit on what you are up to? And maybe a bit on wherever you left of your chat with Max?

Explaining what my master thesis is about.

Nathan: Yeah, we've been kinda busy lately, balancing both organisations. The startup is called XO1 and yeah, that is taking a lot of our time. Building the technology and building the voting system, and talking to potential customers and all that sort of things.

Jeffrey: Can you still call them customers?

Nathan: Well from the XO1 point of view tat is exactly what they are. so for instance
                     when we look at the chain of relationships: XO1 builds the technology and
provides it to flux. It provides it to flux for free, but it technically flux is still a customer, just a free
customer. Flux then provides political power to people, but the people are obviously not customers,
but just members of the movement. Or in reality, when we get elected they are just constituents/
citizens of the electorate. So, but the company Xo1 that is building the tech has to be profitable as
well because it has share holders. The Tech that we are building is expensive to build. In order to
do this and to get the right people getting investment is the way to do that.

Jeffrey: And it is not possible to get funded by the government for these initiatives?

Nathan: Not easily but it is possible. Governments will give you grants for innovation
                     and there are tax incentive ass well that refund you some of the
expenditures for the year. The thing to keep in mind with all of this is that the government aren't our
biggest friend right now. That is probably a bad way to look at it, since we were just in … for a few
days and they is actually a lot of positivity around blockchain. In broader sense the electoral
commission that runs elections are not necessarily convinced of the idea of decentralised voting
platforms. They like the idea of being able to maintain control. This is probably something you see
around the world, so the first use cases with government are going to be very low level rather than
high level. That is, local counsel and stuff like that, they don't want us invested with the politics
around it as the people at the higher are. In terms as flux as a movement, our whole objective is to
overthrow the whole political norm and that makes us not necessarily the best friends of people at
the top level of government.

Jeffrey: No, that is very understandable.

Nathan: So it is a bit of a complex thing, but basically for XO1, we have to built tech
                     that is more broadly applicable to a bunch of other different industries,
market that tech and generate revenue, with the end goal being providing democracy as a service,
for whoever needs it wherever they need it, sort of ubiquitously. And that will go through many
different stages, but the final stage / the mission for us is that we have a form of participatory
democracy that allows us to participate in real time. That is the vision.

Jeffrey: That is very interesting, So, I have a list of questions to make this interview a
                     bit more structured than the last interview which felt more like a meet and
greet with what the company does. Because to me, it would seem a lot more logical to try and be
more subtle in the manner in which you speak to the public. You have been very blunt in the way
you speak out as flux and if you are, in a way, overthrowing government, have you also tried other
tactics in regards to communicating your philosophies to the public?

Nathan: Yeah, so good question. The truth of the matter is, that if we are successful
                     we are a threat to the current establishment. So here is the thing Jeffrey,
there are kind of a few ways to look at this in terms of PR / in terms of optics and how people thing
of us. There are other organisations that have been trying to do this for some time and they haven't
been successful. One of our key points of difference, not just locally be around the world, is that we
are actually taking about replacing representative democracy, and we feel very strongly about that,
and that is the kind of thing that gives us a bit more flavour than being like; Heeey guys, getting
people a little bit more involved might be a good thing in democratic government. In terms of
attracting people to join our movement, that proposition is something that really excites people.
So, the reality is that it will be a very slow change. Not like an ordinary revolution where we pick up
guns and shoot people. Its going to take a lot of time, its not going to be a scary thing. If its
successful, it will come about because we started using the system in a very non invasive way. A
la, there will be parliamentarians and they agree to vote the way the system decides until the

success of that system just grows and grows and grows, until it becomes the logical decision for a society to move towards using an Issue Based Direct Democracy model as opposed to a representative democracy one.

So its not going to be like a cataclysmic event that occurs that will shatter the vibes of politics, it is going to be a very slow going transition. And while our rhetoric sometimes has a revolutionary nature, it kinda needs to be because it has to excite people. And if we can't excite people, they aren't going to do stuff for free, which as a political movement you need people to do. But in reality, it will be a 20 year journey, probably more, to make this all happen.

Jeffrey:　　　　　　　And That is for only Australia?

Nathan:　　　　　　　Well that is definitely for Australia, and the world, I mean, there might be smaller countries that might be thinking of adopting this on a 10 year time scale other than a 20 year time scale. That is what I would like to see.

Jeffrey:　　　　　　　There is already a political party in Denmark who uses blockchain based I-voting for direct democratically, deciding upon internal issues.

Nathan:　　　　　　　Yeah, for sure, one of the first areas were this will begins will definitely be inside parties, that is a very easy way to start the process. Uhh, the interesting part of how the tech is applied is when we talk about. So for us, the IBDD is more than just direct democracy in terms of good ideas. For example, there was already a direct democracy party running in Australia, that promised to do the same kind of stuff. As you've spoken to max, for us, direct democracy is not the solution to the problems of politics today. Actually, it comes with allot of its own risks and challenges. That is why we are doing this. I mean, if we just thought direct democracy was the solution, we would've just joined one of the other organisations. We don't think that and, for the most part, the people who have joined our movement also recognised that. We don't just want to be proponents of just Direct democracy or participatory democracy, we want to be proponent of a system of direct democracy of which we actually think it will produce much better results for everyone, when implemented at every level of politics.

Jeffrey:　　　　　　　Cool, so can I first backtrack a bit to, what is your background, hot did you study and how did you come up with the idea for Flux?

Nathan:　　　　　　　*Explains his back story, how max came up with the idea, and how they bonded over shared history in the blockchain community. In short, the name changed from neutral voting block to Flux.*

We Got the members we needed in a few weeks after we run some Facebook adds. After that, we went down to Canberra and registered the party and a coupe months after, it was all done and dusted and then we had a political party. We are probably the youngest political party leaders in the country. We needed to have the technology to run this on, and the best way for us to build it since it didn't really exist. And that lead to the idea of commercialising that and taking investment. And that investment formed a large part of what we use to build up our brand recognition in the name of flux, which has a lot of positive flow over effect.

All the money we used to run our first election campaign came from investment that we took from the company fund. So it has been a bit of a funny interesting road to where we are now. And we have done things very unorthodoxly, definitely different then the road you expect a political party to go, but there is almost six and a halve thousand members in the party in Australia, and that makes us one of the biggest political parties in Australia by members. Not by vote, but still we've created quite a following.

Jeffrey: So the people who follow your political party are considered to be quite determined followers of the movement.

Nathan: Yeah, they are pretty into it. And we have just passed the yearly test of seeing if the membership base is still with us, committed and on board with our ideas. So even though a year has passed, we are still kicking on!

Jeffrey: How did you come up with the Idea for this?

Nathan: So max was the one who came up with the idea at first. He Had the idea that if you could convince a bunch of political parties, they could share a senator and get allot more done. Because right now, they don't get elected at all. So, if you could find a way that they could share political power, they would at least get a voice in parliament. When I got involved and we talked about this for a few weeks, I was convinced that the system shouldn't be one that aimed to get political parties, but start to think about it as something that is created for the people, as opposed to one for political parties.

And that is where IBDD evolved from, as a full solution to the problems of democracy today. There were a few steps in there, and obviously a lot of thinking went into it. We had about any single objection thrown at us that you could have, and we think that so far that even if we haven't tested it out yet, so far we have handled quite well in terms of having good explanations on why this is going to work really well.

There are a couple of cavities in that, stuff that needs rethinking when eventually it gets implemented at a high level decision making stage. Things like budget, mechanic things like war and the need of having some kind of commander chief. This all really end game implementation stuff that i'm sure we will have decades to figure out with the use of our system. In the short term, in terms of making decisions the way that a parliamentarian would make decisions, we are really confident that this is going to stand up to any criticism you could throw a t it at this point in time.

Jeffrey: This is all really theoretically speaking, but you don't have a case running right now?

Nathan: Thats right yeah, but the good thing is, when you have six and a halve thousand members, we now have a really good community to test this on.

Jeffrey: Would you say that this community is big enough for IBDD to work?

Nathan: Look, the bigger the better, and ideally we would be talking about hundreds of thousands, but if we get all members on board it is a very good start. The party is constantly growing, and we are getting to point of using it more and more and actually getting some sensible results, as opposed to the crazy ones we want to avoid from having small groups of people. But anyway, it is hard to know for sure what is that point where it is either to small or to big other than to just try it out, so that is what we are doing.

So basically we are going to role out a parallel parliament and see how people are going to participate and what not, and analyse what happens.

Jeffrey: Meaning you will vote internally (within the political party) as if Flux was running the country. Would it also work with people being able to come up with their own ideas on how to solve issues?

Nathan: Not in the beginning, it is hard to that actually without a vector to actually to push that idea. In terms of the economic incentive, the way that IBDD works is that you sacrifice your voting power for the right to create issues. And so, there is no real incentive to do that if you don't have / if the issue isn't going to go anywhere.

So this is the other thing, in terms of elected representatives right, some independents may say that if your community is behind something than maybe I will end up putting an idea forward forwards. There is stuff like that, and we want it to eventually lead to that. That is part of what IBDD is, the idea that anyone can create an issue.

Jeffrey: That was the first time I heard this, so you can create an issue, but you can exchange this for your power to vote? Or how does this work?

Nathan: To explain it in an economic manner, there is a difference between a vote and a liquidity token / a political power token. There are two separate values: one is your vote token, you use it to vote yes or no, and the other one is a political point that represents in numerical terms your political power. Now when you get a vote, you can obviously vote, delegate, or you can abstain. When you abstain, you accumulate these points. Basically, in order to create issues you spend these.

Now what that means is that you don't want to do this to often, which means you cant participate in many things. In order to be successful, you need groups of people. The barrier of entry is high enough that people cant spam the system with nonsense, but low enough that any organised group of people could table issues themselves independently. And that is kind of the Philosophy behind that.

Jeffrey: Could you explain why you need both votes and liquidity tokens?

Nathan: That is because if you consider that there are normally about 300 issues a year, if you would table one vote to one issue, you will end up with every single citizens having too many tokens, which can lead to millions of issues that are potentially tabled every year, which would just be out of control.

But that is just one reason, but in terms of the pain itself being extremely important to this model, is that political issues are not created equal. So if i'm trading my vote away for an important issue such as gay marriage in this country, you will receive a lot more tokens than for some small issue. For example, the issue surrounding gay marriage is blowing up right now in Australia and we are going to have a non binding postal vote to see what the people think, which is going to cost 122 million (Australian) dollars, while we all know what we want to do anyway. So its ridiculous.

But essentially that issue is far more contentious, and it is far more valuable than making some amendment to some piece of legislation where we only change the wording in section 18 line 3C. These things are not equal in their value to society. If someone would want to trade me that issue with the gay marriage issue, that is not likely to happen. **So we need a way to have liquidity between issues, and that is where the token comes in. One gay marriage vote may get me 100 of these tokens while I may only need one token to change this piece of legislation line.**

What this does is it means that if there are things of low impact which people identify as problems, it is very easy for them to make changes to those issues, without needing a heap of public support. At the same time, you got the fact that because you still have to acquire everyones votes, if what you are proposing is radically negative policy, it is still very hard to get across. **The idea basically is that it is very easy to make good changes, it is hard to make bad changes, any organised group of people can make changes to legislation easily.**

Something that Max said a while ago which I thought was really a great idea is that at one point the a class in year six would be how to change a piece of legislation. and so the class decides upon something that really affects our lives and what we want to fix, you understand the space, you learn how the system works and then you change a piece of legislation for the better, being the end of your project. That is why thinking of politics in this terms makes you understand we are viewing

all of this. We want to create a future where its much easier for everyone to participate and where there is an incentive to create good policy.

Jeffrey: You use the term "Good Policy" allot, but I was wondering how you would define this?

Nathan: Okay, so defining it is a lot harder than explaining the sense of it. So here is an example right, so If I said to you that tomorrow the federal government of Australia wants to bring in a policy that says that anyone who earns under a certain amount of money per year, will have to register to become a slave. And they will be slaves for anyone else. For such policy, we get a sense of it being that bad is because it is bad for our collective prosperity. **So thing that are bad for prosperity are bad policy. And I think slavery is quite good example of that, but essentially, good policy is what increases prosperity and the quality of life for people. Makes their lives better**

So there is a sense for it, since it is hard sometimes to apply strict criteria to the policy itself, since often you don't really know whether something is good or bad policy until you see the results, and then you can judge for yourself whether it has a net positive effect on society and does it increase prosperity. Its one of those things where over time, when we make mistakes, the system will tend towards that, because the mistake that we make we learn from, we correct and we are able to resolve in a much quicker fashion than what we are able to do at the moment. In terms of that governments can stick to policies even when they fail, because ego's and politics are attached to it.

If you think about one of the biggest problems we have within representative democracy today, is that a lot of people are making decision they don't actually believe in, but do so because either there political party demands it or they have to leverage over their political opponent. So in a lot of ways, this system removes that component.

Jeffrey: I understand that this us probably something that happens, but how can you prove this?

Nathan: Well, in my opinion that is not something that needs to be proven, that is already an established fact. Its just part of politics. I was in the house of government a few days ago, and I had the good fortune of meeting with a couple of senators and their staff, and people are just casually talking about the dealings / Horse trading that is going on in parliament house right now. They are constantly speaking to one another behind the scenes and offering each other deals: you do this, I do that, you do this, etc. And that is how its works forever.

Jeffrey: It makes sense yeah, but from the outside looking in, I can only speculate.

Nathan: I guess, they don't go out and tell you that they've cut a deal with this party to get this legislation through, because for example the Greens, who are an environmentally active party, don't go telling around how often they have to do deals with the coalition, or the liberal party, to get some piece of legislation the way they want it. They Don't publicly talk about this, because most of their constituents hate the liberal party and don't even want to think that their party has anything to do with them at all. So that is how everybody from the outside sees it, but on the inside, all these members and people are just mates. All of the fighting you see on tv is not necessarily still active after hours. They talk to one another, have very simple conversations and discuss how they are going to go about organising their decisions. Not in everything, sometimes they are bitter enemies on the subject, such as in this gay marriage thing that is happening right now. They are just two sides of a coin. But even still, al these independent and minor parties, there is all kinds of stuff going on back there where they are truing to convince people behind the scenes and how they all use leverage against one another.

So this system takes that leverage component out and makes everybody act in their own interest, which means that you start making decisions based on the likelihood that those

policies will (A) continue to exist and persevere, so you are not spending your political power and (B) that you actually believe in those policies, because you have nobody else telling you how to form your policy decisions anymore, because there are no more political parties and there is no leverage. So thats sort of the gist, or at least one component of it.

Jeffrey: Okay, I have a question in relation to my thesis. Do you think democracy can be improved by creating g better agents (e.g. highly educated voters or purely philosophical politicians) or do you feel like democracy can only be evolved through the development of better institutions?

Nathan: Uhm, so it can be improved, but i can't be satisfactory improved to the factor that we judge it. The reason that it can't in the real world is because of many reasons, but the main reason being specialisation. The world is becoming more complex, and the requisite knowledge and understanding required to make good decisions in certain policy areas requires more specialised knowledge. **Politicians are considered to be generalists, and they are good at being politicians. Not necessarily good at understanding the industries or field that they are supposed to be understanding and eventually making good decisions about.**

So that's the first thing. The second thing in terms of education and philosophy and … Education is one of these things that people often talk about in this spectrum, saying; you can't get good results until people are educated, and you need to educate people and that is how you will fix these problems, not changing the system, you just need to educate people. I'm of the opinion that in, the first place, we have a hard time educating people just on the stuff people need to do to have a successful life and be happy. Take happiness as a concept, suicide rates in the wester world are higher than they have ever been. And that is because people don't really know how to live life and actually enjoy life, without getting to philosophical there. So i think that in terms of education, we have a massive issue that is not going to address itself, and there is not a whole lot of political will the problem in a way that a lot of the people would like this issue to be addressed. So you need to rethink how education occurs.

For us, the way we apply this to politics is that you need to motivate people to self educate around the stuff that they care about. So, as long as you have a political system that centralises decision making, you basically force people to educate themselves on a vast array of political issues. But if we build a political system that allows you to focus on the things that actually matters to you, you have a good reason to be educated and it makes it far easier… Like we think that there will be a lot of networks that will spring up around this idea of decentralised political decision making, such as where people are able to find resources and educate themselves quicker, easier and have the willpower to do it, because they actually have real political say on things that matter to them. Whereas right now, the essence is a layer removed from voters, you make the best decision voting on column A or column B, but then those people will go and do whatever they want. So it doesn't matter how educated people are, you can try real hard and think you are making the most informed decision on which column you are going to choose, but when you are disconnected from it, as long there is this disconnection, we are always going to suffer from the political apathy that has led to people like Donald Trump getting elected.

And I could talk to you about that for hours, I mean the whole trump phenomenon. When he won, it was shocking but it wasn't surprising. Because, there is this obvious political undercurrent where people don't feel connected to what is happening in politics in a meaningful way. I actually look at it the other way, the thing is the smart we get the more demand for access to power we are going to want. If you look historically at societies and stages of democracies vs dictatorships. **The ones that are the most oppressed, the ones that are the poorest and least educated are the easiest to control from a central point. As societies get more educated, they get more money and the economics work better, you see more people getting involved in the political system, which means you need more distributed forms of power.** Even take a monarchy as an example, as an absolute dictatorship as a monarchy, at least the classical monarchies, cause even though the king was in power you had all these lords and nobles who had a lotto influence in that

space. You had a society with people that are powerful and well educated, and those people wanted to have an input.

When you then eventually have a society where everybody is educated, everyone has the resources to life comfortably and have access to the information that they need to make reasonable decisions, people are going to want to have that influence. And that is what we are seeing now in most of the developed world, is why you get so much frustration. Whether the following statement is true or not: "people know whats best.**" And as long as people think they know what is best they are going to feel ripped off when there voice isn't being heard. If you can build a system where peoples ideas are really being heard, lets people's ideas being tested, lets the bad ones fail, and let everyone learn from those bad ones.**

The best example I can give you is that it is just like evolution. Good genes come, bad genes come, but the bad ones die off. The good genes get reproduced and cause the species to continue and we want to apply that principle to our decision making system.

Jeffrey: But not really right? Its not that the bad genes die of …

Nathan: Off course, when I say genes, what I mean is genetic mutations. So like for instance, you don't have genes in your body that make your nose rot and fall off after a certain amount of time. Because that would be a very bad mutation ta have. Genes that can life on are the ones that aren't that bad that you can not live with them. When I say bad, I mean things that cause damage to the organism. Things that are not good for its survival. By good genes, I mean useful genes, like why birds can fly and why fish can swim.

If you take that concept and apply it to policy, and just trial and error, that is what evolution is based on, and we remove some of the barriers that prevent us from trying out new ideas in the same way that the enlightenment opened up science to try out new ideas. We think that there will just be an explosion of prosperity, which is going to start making really good decisions and learning an testing fast, and a lot of good shit is going to happen. Thats the plan!

Jeffrey: That will be nice to happen soon though. You guys have such a theoretical background foundation to base your political party on, with the selectorate theory of power, joys law of management and fallibilism of karl popper. How do different societal groups in general respond to your political approach? (politicians, government officials, ordinary citizens)

Nathan: A lot of the groups think we are crazy and that it is never going to happen, and that its ridiculous. Thats fine, of course they will think that since they are so invested in the status quo. It will be difficult for them to go and start seeing this another way. In terms of converting people in our way of thinking, they are the last people on our list. That is why we chose to do a political party. Because we didn't need anyones permission to create a party. We didn't need to call up someone or ask what is possible, we could just do it and create a political party. And so, if we get elected, we can do whatever we want. If we want to run our party in a way where we let people vote on a policy directly than we can go ahead and do that, cause its entirely up to us.

People tell us that there are other ways we can do this, we can lobby. But lobbying the government to give away their jobs is going to be complicated. So this is the easiest, most peaceful and safest way to start something of which we think that it is going to fix the world. Its like this Jeffrey, If its going to work it will grow, and if its not going to work this movement will go away and we will disappear, we will be a footnote in history and that will be that. But if we are right about the theory, then it is hopefully going to change the world.

Jeffrey: Do you have cases planned where you can actually try out this theory? Will you be trying out IBDD in this upcoming elections?

Nathan: Yeah! I if we get elected, the parliamentarians elected will be using IBDD. The people who are in their constituency will vote using the app, that is how it will work. But there are some other elections coming up before then, so there are other opportunities to try it out as well. And if not here then we will go overseas. We have some are working on a plan right now where we really start getting the gears turning for parties overseas, cause there might be other countries were it might be easier for us to get this rolling, and if that is the case than we will go there. We want this to be a global thing, that is our mission.

Jeffrey: Such as, which countries are you talking to right now?

Nathan: We've got interest in a whole bunch. So far we have had things to discuss with guys from brazil, the U.S, the U.K. and than reaching out to us now are people from India, Pakistan, Germany, France, Canada, some south american countries, some guy from Lichtenstein. We are now structuring internally to accommodate for this kind of growth. That requires a bit of work on our part here in Australia internally in our organisation before we can expand like that.

Jeffrey: And is the technology working completely?

Nathan: really close. By the end of this week we will have an internal demo where we are going to show the technology to the people who are involved, and then hopefully in about a moth and a half time we will have a beta that will be public. Or you will be able to download it through the app store if you have the code to it. So yeah, we are very close the it comes to the tech.

Jeffrey: From all that I hear, wouldn't IBDD be very time consuming for all the voters involved?

Nathan: No it is actually designed to do the exact opposite of that. Direct democracy is very time consuming since every person gets to vote on every issue. IBDD is very different because a voter has two different options where they don't have to be actively involved. A voter can delegate every single issue that comes there way to someone else. The people that are really passionate can do the work. You still have leadership in a sense, but you have far greater control over that.

Then the other part is of course that you can abstain a lot of votes. So you will just get a notification on your phone telling you what the issue is about, and you can just chose to abstain. You might even want to filter the key words for instance. You can abstain all issues other than issues relating to the following key words and their connected areas. Half the issues that come up, you won't even look at them because they are not relevant to you, and for the ones that are you get involved. Max and I seem to have different ideas on the scope of this, but Max things that probably 90% of people will just delegate their votes or even more. That is possible, I am just hoping it is less then that but we will see. I would like to see more people actively engage, but it may be more towards that amount. **But what we want to do is for the people who in a sense become the new political leaders, to not having the barrier of needing to be a politician and contribute as ordinary people.**

Jeffrey: Are there aspects where you and Max are not aligned in terms of the vision of the party or XO1.

Nathan: I wouldn't say we aren't aligned in terms of the vision, but we are in some cases not aligned in what we think might happen. And that is just a number, I mean, when I say that, max just thinks that a lot more people will be delegating and I think, or atlas I'm hopeful that a lot more people will actively participate. In either circumstance, the result will be the same.

Jeffrey: How easy will it then be the change this delegation from person to person?

Nathan: Very easy, just a few clicks and it will be possible at any moment in time. Changing delegation should be very easy since this will be an incentive for people have support, to make good decisions. Because if they start making bad decisions and have bad policy outcomes, people will start moving away from them. People want to support people that make good choices that improve their lives.

Jeffrey: Wouldn't it still be very easy through this platform for people to convince other of false truths to create a following?

Nathan: Technically yes, but not sustainably. Like, you could set out.. First of all, a lot of credibility will come from people's reputations. If you are somebody with some crazy ideas and you are unknown, you will find it difficult to get support, while if you are the head scientist of our head science board, you are not going to find it so hard, but you are also the kind of person who is less likely to lie to people and manipulate people for some other reasons. So, in the same way that good and bad policy ideas will come and go, bad leaders will come and go. Some leaders will come along telling lies to gather support, but they can't survive for very long in this system. So the leaders who survive and continue to be good leaders in the system are some of the ones that are actually good leaders. This system doesn't support to get things right every time, but it corrects mistakes quicker. In relevance to now, think about how many politicians promise to do certain things and than don't do it. Literally, every election its what happens every single time. So we cant prevent that, but we can prove that those people are liars quicker.

Jeffrey: Ok. So you think you have designed more of a foolproof system than the one that is currently in place. If something goes wrong, then we can correct it quicker.

Nathan: Yes, that is exactly right. And eventually, this will have a fundamental alteration of society too, because people will start to see what works and what doesn't work. What leaders are effective and which ones aren't. People will become more engaged and the more engaged they are, the better the results will be. It is quite complex the sense that there are a lot of moving parts, but the way that all those moving parts come together, foolproof is a good way to look at it.

Jeffrey: A country right now still has a bigger economic picture to follow. With IBDD, would there still be some form of central administration that is in charge of the bigger economic picture? (decision for higher SU & lower taxes)

Nathan: This is a good question, and there are maybe ways we think about that kind of stuff that we don't have yet. but we have one thing to bear in mind, is that we think this system is going to encourage cooperation. If you think about those tokens. When you spend those to vote on issues, you are essentially giving away your political power and you kinda want to avoid doing that. You would want to get what you want without spending your political power. And so, what this will tend to do is drive political cooperation, so that people who have political ideas, instead of fighting one another and spending their political tokens, will find ways to work together to make this mutually beneficial.

Because of its left right kind of thing and there is a lot of identity (ego) rapped up in it, the typical way politics work today is you get people fighting. When you create such an economical model, you encourage cooperation. What end up happening is that policy will take long term directions, because the people who are involved in the decision making will have different ideas, and will come to form some mutual beneficial consensuses and those will form long term policy. Whether there will be deviations depends on if people are content with this direction we are heading in, which is okay, since we do have to change things when there aren't high forms of contention

because maybe someone is wrong. But the things we generally agree on being good, we will continue to move into those directions. And people will spend more energy to find those mutually beneficial applications, rather than arguing until one of the issues gains public support. We want to create situation where one side has good points, the other side had good points and we will sit down and have an adult discussion about it and see what policy directions we can try and test together and see who is right, in a safe manner that is productive and doesn't waste all of our resources in doing so.

Jeffrey: Would this mean that you can see who is creating which policy? And that you can communicate with that person or group?

Nathan: Yeah so, when you vote in the system, everyones vote is anonymous until you start accepting votes from others. So if people start referring their vote to you, you can no longer be anonymous in the system. If you're a delegate your vote has to be transparent for liability issues.

Jeffrey: I came across an article the other day that talked about the irony that blockchain based governance are originally created to eliminate third parties, but that the creators of these blockchain based governance systems are now pursing to achieve a dominant power position in society. Do you think this is the case? How could this point of view can be changed?

Nathan: So, technically that is true, but when you are building a voting system that is completely transparent, you can't manipulate the voting system because you have a decentralised blockchain based voting system that has been designed specifically to avoid that problem. And secondly, if we did decide that we would want to vote in our own way and not vote according to the voters interest anymore, we couldn't survive. We are really confined in terms of how we could misuse power, because any miss use of power would destroy the organisation.

Jeffrey: Because the whole network is open source right?

Nathan: Yeah thats right, everything is inspectable. And a thing to remember as well is our objective. We set about to do this with a clear mission, and it is not about ideology. If you look at all other revolutions, they had strong missions and people got behind them and supported them but they were about ideologies. This is not about ideology at all. Our Only concern is about making democracy better. If you look at other revolutions, people overthrow the government, the revolutionaries get into power and they just become the new dictators.

Well, this is a completely different affair. The only thing that unites all of the people in this movement is the anticipation of that future. The idea that we are going to have a better system of governance, that is the only thing that connects them. Our members are dispersed all over the scale of left and right wing politics. We have radically different views on both sides, but the common thread is that we should be able to have meaningful discussions and real say on these issues. So we have to stay true to that, otherwise this organisation doesn't exists.

Jeffrey: Which seems like an ideology in itself.

Nathan: You could cut it like that, but in terms of the traditional sense of left and right, we are not about that. We are just about decision making, just about the government model that we use.

Jeffrey: What do you think we can learn from existing models of democratic governance?

Nathan: All the things not to do.. Haha, no there is definitely a lot of positive things coming from democratic governance. Since we adopted democracy, we

have been more successful than ever before. Democracy broadly speaking is a good thing, but if you look at it, the more successful we get, the higher demands we place on democracy. There is actually a really good talk that Max gave on this topic in Brazil.

Jeffrey: Did you hear about this Argentinian political party called Democracy OS?

Nathan: Yeah, but its much more based on direct democracy and direct participation around centralised systems. Which in our mind will still suffer from the same issues as representative democracy, but on a bigger scale. While Flux is trying to remedy all of the problems.

Another way I can say this is that Flux is not about empowering the people. Flux is about making better policy, and it just so happens that the way we have gone about making better policy, it is necessary to empower the people to achieve our goals. because the way human society works and because the way power works. So, If you look at allot of the other direct democracy movements around the world. Their focus is on empowering people, not on good policy.

Jeffrey: But you come along the same steps when implementing this system though.

Nathan: True, but not necessarily. It just so happens that an evolution of direct democracy does produce good policy, but it doesn't mean that all versions of direct democracy produce good policy.

Jeffrey: What is the difference between your role and max's role in the company?

Nathan: So me and max are the founders. Max is the tech guy, he is the engineer and building the system, the genius behind it all and I'm just the face. I just get out the and talk bout it. Thats my job, so we decided early on to switch roles due to my background in dealing with media and sales.

Jeffrey: Are you working on this on a daily basis?

Nathan: No, Flux has been taking a bit more of a backseat, while a lot of the time has been going into working on XO1 and the software to get everything done. My job there is to work on commercialisation. Currently, it costs almost 15 dollars a vote in an election, and we are planning to get it down to 1 dollar a vote.

From here on out we discuss a bit on what the plans are regarding the startup XO1 and how they are planning to commercialise their products.