Distributed democracies? A sociological analysis of cryptocurrencies and DLTs

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Submitted in accordance with the requirements for the degree of Doctor of Philosophy

University of Leeds
School of Sociology and Social Policy

October 2024

The candidate confirms that the work submitted is his own and that appropriate credit has been given where reference has been made to the work of others.

Acknowledgments

This thesis is dedicated to Naru, my incredible daughter who was born in the middle of this research. You made it possible for me to wake up every morning with the motivation and inspiration to write my thesis. Thank you for coming into my life when I needed you the most.

I want to thank my supervisors, Dr Mark Davis and Dr Stephen Hall, for your invaluable guidance and support throughout the project. You helped me get back on track at the most crucial points and gave me the encouragement I needed to push my limits. I also thank Mr Geoff Oatley, whose generous donation made this research possible.

Thank you to Baba for everything you do for us, and to my parents, siblings and the rest of my family, whom I miss a lot. But most of all I want to thank my wife Sayantani, for your unending support, invaluable insights, and patience to put up with me these past few years.

Abstract

This research is a sociological analysis of cryptocurrencies and their underlying Distributed Ledger Technology (DLT), also known as blockchain technology. DLTs are proclaimed by supporters to enable disruption and democratisation through replacing trust with algorithms, and intended to offer an alternative to 'failing' traditional financial and economic systems. This thesis contributes a balanced, alternative narration of DLTs, where these promises are considered in relation to wider democratic and economic imaginaries. To make sense of what DLTs actually are and can be, this thesis provides a framing focussed on three recurring themes; Trust, Democracy, and Humanism. Utilising these themes and drawing on theories from economic sociology on the social dimensions of money, markets and value, I demonstrate that DLTs find it difficult to accurately address their claims and to constitute an alternative to traditional systems. This is partly because they are founded on the same assumptions about money, markets, and human organisation as the systems already in place, but more fundamentally because any economic arrangement is also a social arrangement, and it is impossible to remove the need for trust. I demonstrate that DLT-based organisations also tend to resemble other technology and finance ventures in practice, being designed to mediate trading and/or extract fees. These developments therefore also fuel an acceleration of speculation through offering new routes to commodification, in turn affecting our wider economies the more they get entangled. Following an ethnographic approach, the fieldwork consisted of semi-structured elite interviews and observations conducted at industry conferences, as well as grey literature analysis. By hearing from people involved with the DLT space, this thesis offers an empirical dimension that is the first of its kind in the discipline. Drawing on both empirical evidence and theoretical framing, the thesis also contributes a typology of four archetypes that embody different motivations, imaginaries and interpretations of cryptocurrencies and DLTs.

Contents

List of illustrations

Chapter 1 - Introduction

In April 2024 the global cryptocurrency and crypto-asset markets had an estimated value of $2.13 trillion[1], a figure that surpasses most stock markets and most national GDPs. This is, in financial terms, quite an achievement for a technology that started out as a niche experiment among libertarian programmers and which for its first several years was mainly associated with criminal activity. Despite the relatively speedy growth in interest and investment, cryptocurrencies and their underlying 'blockchain' technology (or Distributed Ledger Technology)[2] have retained an inscrutable mystique to those uninitiated and remain hard to define even among their vocal and zealous supporters. What supporters are keen to make clear, however, is that this technology has potential beyond asset trading and profit growth – it is the democratic future of money.

Despite idealist exclamations about democracy, 'crypto' has seen the most interest from tech companies, venture capital and hopeful, tech-savvy members of the public, motivated by business opportunities and return on investment. This tends to be the case with many new innovations in financial technology (fintech) and is perhaps unsurprising. However, there is also growing interest from financial institutions and governments. Intuitively, this interest could be assumed to relate to aims of understanding, anticipating and regulating growth in cryptocurrencies as financial assets, but in light of the original (and arguably still thriving) *intention* of cryptocurrencies, the institutional interest and investment is more curious. While one might assume that the main purpose of a digital currency would be to buy and sell it as an asset, this element is often downplayed by orthodox/idealist creators and supporters, who instead present the technology as an *alternative* to state-issued currency with the aim of disrupting and eventually replacing traditional finance and removing the need for governments altogether (Atzori 2015). These aspirational objectives are

[1] As measured in 'market capitalisation', according to https://coinmarketcap.com/, one of the most well-known websites providing real-time price tracking of crypto assets.
[2] Although Blockchain originally only was the name for Bitcoin's underlying infrastructure, it is the most common term of use in reference to any form of Distributed Ledger Technology. I will therefore hereinafter use 'DLT' and 'blockchain' interchangeably. See Appendix 1 for abbreviations and glossary of technical and industry-specific terms.

driven by the notion that cryptocurrencies and the organisational capacities they enable through their underlying 'Blockchain' technology are *more democratic* than the societal and economic systems we currently have in place. The reason the technology is argued to have this capacity is that it is transparent, tamper-proof, open source, and decentralised, which makes it resistant to censorship and removes the possibility for centrally taking decisions that affect the whole system. Given these promises, it seems unlikely that institutions and governments would support developments that aim to replace them, so why are they interested and invested in this technology? This contradiction seems to stem from a confusing array of interpretations concerning what the technology is for, who it is meant to benefit, and even *what it is.*

To illustrate this confusion, the UK Government announced in 2021 that it was looking to launch its own digital currency, the 'digital pound', a so-called CBDC[3] (Elliott 2021). Just two months after this announcement, the Bank of England reported that cryptocurrencies could be a threat to the entire economy, as people may withdraw their money from high street banks and cause 'bank runs' (Partington 2021). Another example is Facebook, which was given the green light to launch their own dollar-backed cryptocurrency called Diem in 2021 (Wilson and Schroeder 2021)[4]. But, after criticism from regulators and the finance sector the project was abandoned and Facebook (now under the name Meta) sold the project in January 2022 (Baker, Hamilton and Kharif 2022) to a company that subsequently wrote off their investment in January 2023 (Gerken 2023).

In addition to contradicting statements and concerns, it also appears that extremely wealthy individuals are able to affect the price of cryptocurrencies merely by tweeting about them, such as the case with Elon Musk announcing in February 2021 that Tesla would start accepting Bitcoin (and also that they had bought $1.5 billion worth of Bitcoin themselves) (Kovach 2021), only to later retract his support over alleged concerns of Bitcoin's environmental impact (Jin and Singh 2021).

[3] Central Bank Digital Currency.
[4] Other large tech companies are, or at least were, expected to follow suit.

Two months later he said that Tesla was likely to accept Bitcoin again in the future (BBC 2021). Each time a new statement was issued, the price dropped or jumped by several percent. It has not been disclosed how much he has profited personally from buying and selling cryptocurrency amidst these rollercoaster valuations he has caused. Despite his potential personal gain, he is not the only one raising concerns about climate impact– Bitcoin consumes more electricity than some entire countries, mainly through the use of massive server farms across the globe (Aratani 2021).

Cryptocurrencies also caused a world-wide shortage of graphics cards in 2021. This was set in motion because 'mining' cryptocurrencies is often a demanding process and the graphics cards were bought in bulk by crypto-miners for their computing power (Laird 2021). Early 2021 also saw an increased interest in so-called NFTs (Non Fungible Tokens), a form of crypto-token that is tied to an underlying object, such as a piece of digital art (Lum and Clark 2021). Digital art can of course still easily be copied, but the owner of a corresponding NFT will know that they own the 'real' one.

As the prices of cryptocurrencies and assets such as NFTs have had a general upward trend (despite continuous ups and downs), the general public is increasingly interested in the technology as investments, despite unsavoury aspects of the cryptocurrency trade having also come to the fore. This includes thousands of people who started investing when Bitcoin saw its first high price notations in 2017, and who later lost their life savings when the price crashed again in 2018 (Peters 2021)[5]. As many as 14% of those who have invested in crypto-assets in the UK funded these purchases through taking loans (The Guardian 2021). It is also worth mentioning that for the first several years of its existence cryptocurrency usage (more specifically Bitcoin, the original and initially only cryptocurrency) was mostly associated with its use for criminal purposes, including being the

[5] This pattern continued and throughout 2022 and 2023 the crypto markets faced their longest downward turn since all-time highs were reached in 2021 with some varieties that were thought of as 'stable' also collapsing. Most notable among these were Luna, which saw a value drop of 96% (Brooks 2022).

currency of choice for drug and weapons sales on the infamous Silk Road website[6] (Sergeenkov 2021) and elsewhere on the Dark Web (Popper 2020).

Despite this poor track record of return on investment for the average person and the somewhat disparate attempted applications, cryptocurrency and blockchain technology is still being portrayed by supporters as more inclusive, more democratic than traditional finance and even as a route out of poverty for people living in the world's poorest nations (Scott 2016). For supporters, this argument stems from cryptocurrencies and DLTs being a response to what was seen as a failed financial system after the global financial crisis of 2007-08. The technology is thus still associated with disruption, democratisation and fundamental challenge and change to our financial sectors and society as a whole, but is this aim really shared by all those who have invested and built up such a huge market? Based on how crypto is discussed in public fora, do people really view them as more than assets and if so, what are all these different actors hoping to *get* from engaging with this space?

As may now have become apparent, widely disparate types of actors and institutions are attracted to the technology but with contradicting expectations. This makes the DLT space confusing to navigate. Furthermore, because of the associated bold claims of democratisation and inclusion by its most idealistic supporters, it is important to understand the relationship between these stated goals and the actual design and assumptions that underpin DLTs.

The aim of this research is to understand the relationship between how cryptocurrencies and DLTs are implemented, and the ideals presented as the *real* driver behind their existence. In other words – what are the democratic and economic imaginaries among those who support and/or use the technology? Are these imaginaries common across different types of DLT-based projects and shared by different types of actors? Who are the different actors and their approaches/imaginaries for DLTs

[6] Silk Road was an anonymous online marketplace on the dark web, where drugs, weapons, and other illegal items were sold. The primary currency was Bitcoin. The website was shut down in 2013 by the FBI.

and cryptocurrencies? Which actors stand to benefit the most from the growing success of the DLT space?

To find answers to these questions, this research focuses on those who lead organisations at the forefront of blockchain and cryptocurrency developments. My argument is based on accounts from investors, entrepreneurs and financial services firms – an important empirical contribution to the understanding of DLTs in the discipline. My analysis provides a narration from a sociological perspective of what cryptocurrencies and DLTs are, what they aim to solve and how they work. This is the first balanced and sustained engagement with this technology of its kind, and which gives serious attention to how it is presented and expected to work by those who support it. Second, through my analysis I identify three overarching themes: Trust, Democracy and Humanism, which encapsulate areas and imaginaries that emerged recurrently throughout the fieldwork. In addition to this thematic reading, I propose a typology of four archetypes that embody different aims, imaginaries and ideological narratives – an original analytical categorisation of actors and their relationship to cryptocurrencies and Distributed Ledger Technology.

However, to assist the reader in contextualising these questions and to make sense of the apparent contradictions, this introductory chapter first includes an explanation of the fundamental political and economic goals its early iterations were created with (Chapter 1.1), as well as the central tenets of how blockchain technology is meant to work (Chapters 1.2 and 1.3).

1.1 – What are Distributed Ledger Technologies trying to solve?

The first iteration of blockchain came with the creation of Bitcoin in 2009. In the preceding white paper 'Bitcoin: A Peer-to-Peer Electronic Cash System' (Nakamoto 2008), the person or persons known as Satoshi Nakamoto provided the foundation for what they claimed was a new form of money, presented as an anonymous and tamper-proof electronic payment system. It was in part a reaction to the global financial crisis of 2007-08, but unlike much of the critique aimed at the financial markets having been given too much free reign, the proponents of Bitcoin thought the

opposite. To them, it was the state-controlled fiat currency and associated economic structures that fundamentally were to blame. This argument aligns with a neo-classical or Austrian school economic perspective, most famously represented in its foundations by Carl Menger (1892) and its modern form by Friedrich Hayek (1976). This perspective is centred on the idea that the market can self-balance through the competing interests of its economic actors, and supporters in the cryptocurrency community may be critical of fiat currency for two main reasons:

1. Fiat currency is too centralised, as the system is based on a central bank together with commercial banks holding a monopoly over payments, and are increasingly trying to eliminate cash, the only form of currency and payment not under total surveillance.
2. The banking system manipulates the supply of money in society, leading to instability that market forces otherwise could have balanced on their own.

To further explain what they mean, the fiat currency system currently operates mainly through digital payments, with the central bank operating databases of the reserves of money tied to the commercial banks. Commercial banks in turn hold the databases for balances and reserves of individual citizens, i.e. their bank accounts. As most payments are done digitally, this means that banks usually only need to adjust numbers in their books for the involved parties of a transaction (or go through the central bank to settle payments made between accounts of different banks). Typically, settlement by the central bank between commercial banks is not done for each payment, but at the end of a day for all transactions that have taken place throughout that day. This means that all economic activity that involves our bank accounts is registered, managed and therefore seen by this combination of central and commercial banks. Only when we withdraw cash does the numbers in the databases transform from a ‘promise of money’ into physical currency and only then can we use our money in ways that are not monitored and mediated by the banking system.

The supply of money is affected by this banking system in two ways. First, through the central bank (such as The Bank of England), which has the power to simply introduce new money into society.

Presently, however, it is more common for the central bank to utilise a process called *quantitative easing,* which involves the central bank purchasing securities (such as shares) from a commercial bank, using money that was previously not in existence. This means that the central bank now owns part of the commercial bank, in exchange for providing them with brand new funds. Unlike releasing money into the system without any strings attached, quantitative easing gives the opportunity for the commercial bank to buy their securities back at a later stage, leading the central bank to then absorb the newly issued money back into non-existence.

Second, commercial banks also have the capacity to 'create money' by issuing credit. Since the early 20th century banks have not needed to hold the equivalent to what they lend in reserve, but merely a percentage – a system known as *fractional reserve banking*. Today, the size of the reserve does not have to conform to a particular percentage but is regulated by central banks through adjustment of interest rates. This reserve is registered with the central bank which in turn allows the bank to issue loans (McLeay, Radia and Thomas 2014). These *fractional reserves* are intended to cover any unforeseen mass-withdrawals, known as 'bank runs', but the amount is not always enough (Bjerg 2015: 65). One example is the aftermath of the 2007-08 financial crisis where governments had to step in and 'save' banks that did not have the capacity to cover defaulted credit.

Bitcoin was introduced as a potential alternative to the banking system. Payments would be anonymous and not traceable to a specific person, thus addressing the perceived problem of surveillance of digital payments. Supply would be fixed, not subject to interventional cash injections and most importantly not controlled by any central authority or institution. It would be completely digital, but simultaneously have the characteristics of cash. It would allow access to payment systems for anyone, anywhere, as it would operate over the internet and thus act as bank accounts without requiring any contact with a commercial bank.

Quickly, the idea of Bitcoin therefore became associated with ideas of *democratisation*, particularly among those with libertarian values. This is because the libertarian assessment of the 2007-08

financial crisis sees that the main problem lies with the creation of new money by commercial banks and the bailing out of failing banks by central banks (Weber 2016; 2018: 102-103). Most notably, this applies to the approval of mortgages without close-to-equal value of the asset purchased, as this distorts the valuation of the property as a financial instrument, leading to bubbles that eventually burst, as well as causing inflation of the currencies themselves (Poole 2010). With Bitcoin, a libertarian may see it as possible to overcome what they see as the root of the problem with bank created credit money and bailing out of failing firms (and indeed with everything from institutions to entire governments): that human biases and human error in administering society will always lead to corruption. This is because they believe all humans are driven by individual profit-maximisation, which causes trust-based payment systems to have an inherent degree of fraud, corruption and rising costs for mediation of disputes and reversal of already made payments (Nakamoto 2008).

With fiat currency, society uses the banking system as a trusted third party that enables the rest of society to accept currency in economic activity between each other, knowing that the money will be redeemable later on, and that if something goes wrong, there are governance structures in place to correct those wrongs. The Bitcoin community therefore argued that we no longer would have to trust any third parties because the blockchain would replace them and remove the *possibility* of corruption as well as the *possibility* to distort value and cause inflationary bubbles. The biggest selling points thus revolve around technologically granted *transparency, decentralisation, freedom from manipulation* and a new form of *non-human trust/trustlessness*.

With all these promises in mind, what exactly is a blockchain and how does it work? Being a technology, the operation of it comes with its own technical terminology and jargon. As I will argue throughout this thesis, this is in part a deliberate attempt at making the technology seem more sophisticated and robust to those without technical expertise. In the next section I will do my best to explain how a blockchain is meant to function, which will act as background for further discussion about how their design relates to their capacity to address the promises of transparency,

decentralisation, freedom from manipulation, and replacing trust. However, do bear in mind that this is a technically difficult subject that is further obfuscated in the interest of those who desire to be its divinators.

1.2 – How do blockchains work?[7]

Similar to the central bank, what a DLT actually offers is a ledger – a database that stores information on accounts, balances and transactions. Unlike traditional ledgers, which have a master-copy, all data in DLTs are stored in identical copies on each computer (in DLT terminology often called a 'node') within a vast Peer-to-Peer (P2P) network, making them *decentralised* (Scott 2016). In principle, anyone with a powerful enough computer can take part as a node in the network, making editing and storage of records open-source and without traditional institutional intermediaries.

Being open for public access is possible because the information needed to validate and record transactions is public and visible to anyone, including actors taking part as nodes in the network, actors who want to utilise the ledger, as well as outsiders (Atzori 2015). This is how the technology addresses the problem of centralised authority. Rather than requiring oversight from regulators and auditors, the information is always viewable and always in its latest version, with every previous transaction being linked to the next, in a 'chain'. It is therefore assumed that the transparency of information is enough to replace the need for auditing or any other form of human intervention.

So how does using a blockchain account work? Every user (node or not) has a *public key*, a long string of numbers that is simplified into a *public address*, akin to a bank account number, whose transaction history and current balance is publicly visible. For security, each user also has a *private key* that acts as a password to their account, ensuring that the public information cannot easily be traced back to a specific person, as well as blocking other users from carrying out transactions from

[7] This section is an attempt to accurately describe the technical side of DLTs. Because this is a rather complicated and abstract process, it may be helpful also to view this video, https://www.youtube.com/watch?v=YIVAluSL9SU, which explains how DLTs work with the use of visual aids.

accounts other than their own (Nakamoto 2008). When a transaction is taking place, the user indicates the amount to be transferred as well as the public keys (account numbers) between which the transaction will take place. As this information is public, the nodes can validate transactions carried out across the network and then add this information to a so called “block”, a permanently consolidated compilation of transactions carried out over a specific period of time. Each created block of the latest transactions is then linked to the previously most recent block, thus forming a ‘chain’ of blocks (Eyal 2017: 40-41). The blocks are linked together by containing information about all previous blocks, enabling identification of the correct order of blocks. It is this chain of blocks that becomes the decentralised ledger. This whole process is demonstrated in Figure 1, below.

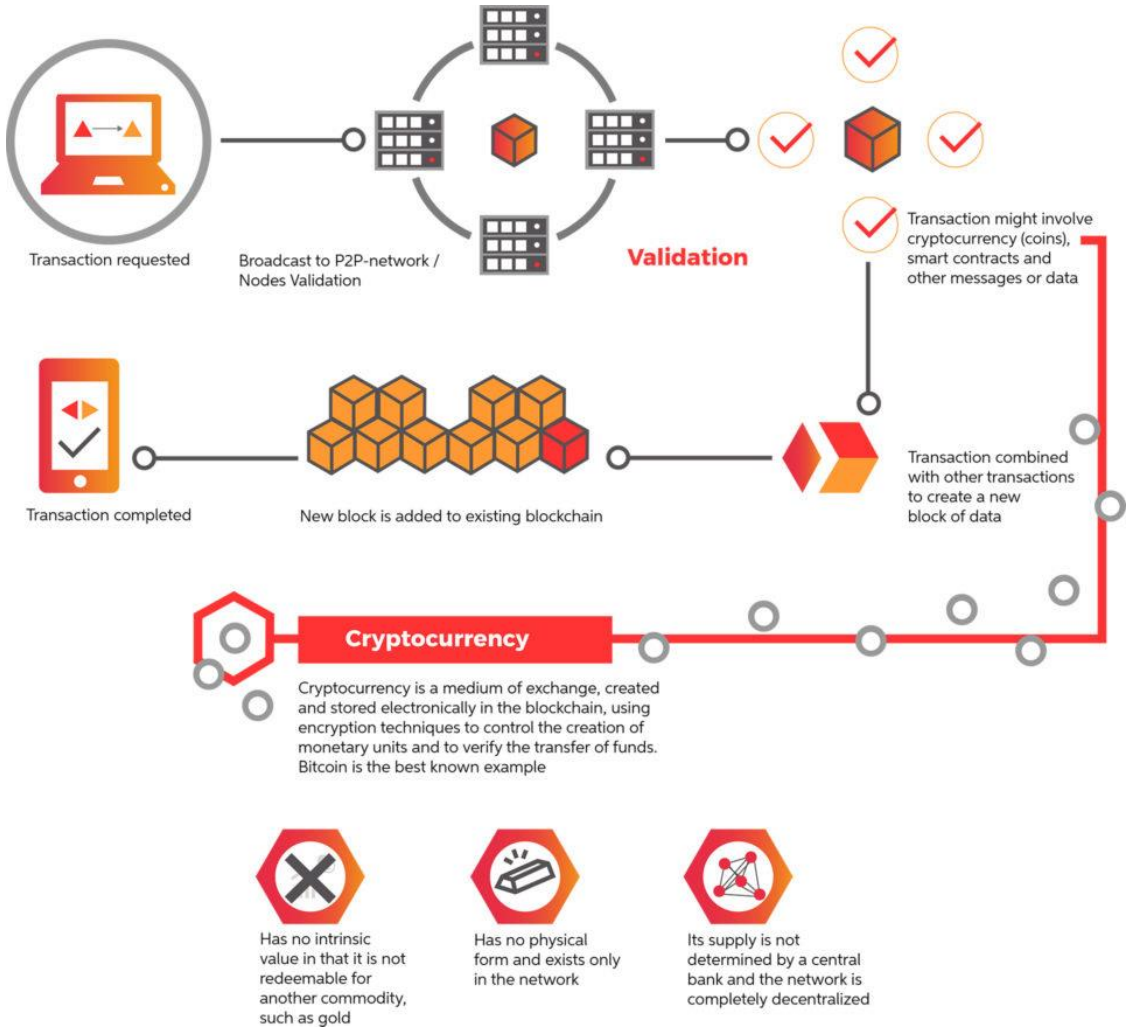

Figure 1: How DLTs work. [8]

[8] Image can be found on https://web.infinity-economics.org/wp-content/uploads/2018/03/how_blockchain_info-960x875.jpg, accessed 1 July 2019

A problem for centralised ledgers is that they typically are a single-point-of-failure, increasing the risk of systems being hacked and information falsified. This means that if a blockchain had been similarly structured, anyone could try to add a block that shows that large amounts of currency had been transferred into their own account/public key from other users. For a digital currency, the risk of transactions ending up in the wrong accounts, or balances being changed on a whim is clearly devastating. In order to prevent the possibility of falsifying information, DLTs use cryptography, specifically a process called "hashing" in which vast amounts of data are translated into a fixed and specific set of characters – a *code* that is difficult to conceive but can easily be checked backwards to reveal the true data (Eyal 2017: 39-40). It is the built-in security measure against hacking.

Each node (computer that stores block information) competes to be the one to add the next block by solving an algorithmic puzzle to arrive at the right hash, in other words the code. The incentive for nodes to agree to devote their computers (which for most DLTs requires great amounts of processing power and hard drive space) lies in the reward. Adding a block to the chain is not just bookkeeping, but also how new cryptocurrency coins are created. The node that successfully adds a block to the chain receives a payment, recorded as the first transaction of the next block. Because of this, the difficulty of the puzzle is regularly adjusted automatically to reflect the number of nodes and their combined computing power so that increases in the number of competing nodes does not entail an increase in the rate of block creation, which otherwise would lead to the creation of too many new 'coins' (Eyal 2017: 41; Lewis, McPartland and Ranjan 2017: 4-5). This further also means that without continued transactions to record, no new coins would be created.

It is this process of solving puzzles, adding blocks and receiving the reward that is referred to as 'mining'. After a completed puzzle and added block, all other nodes verify that the hash code is correct and immediately update their ledger to now include the new block (which as mentioned above is much easier to check than it is to create: the verifier can simply input the code to retrieve the complete data of all transactions and compare it to their own previous record). This entire

process is completely automated, and there is no need for human input or checking. The verification process not only makes the ledger unified, but protects against fraudulent attempts to add fake blocks, as they would not pass the verification of other nodes and would cause the system to reject any incorrect blocks. The openness of information together with the cryptography is how the technology promises to address the problems of corruption and manipulation.

The process described above is known as 'proof-of-work' (Eyal 2017: 40-41), which is one of the most widely used models and notably utilised by Bitcoin in its use of DLT. There are also other solutions for block creation, such as 'proof-of-elapsed-time', where the qualification for adding a block is based on a competing node leaving their computer hardware idled for a set amount of time (instead of solving a puzzle). Another commonly used solution is 'proof-of-stake', where a node offers their in-system funds as stake for creating the next block, each currency unit acting almost like a lottery ticket. Instead of relying on the computer power to solve a puzzle, proof-of-stake instead tends to reward those who have 'bet' the highest stake. Many other versions exist, but most use some form of the proof systems and cryptography to ensure the integrity of the decentralised ledger.

DLTs thus claim to offer a system of trust that combines transparency, decentralisation and cryptography, allowing users to carry out transactions without having to trust a specific third party. This is how the technology promises to address perceived biases and human error of the institutions associated with traditional currencies (Lewis, McPartland and Ranjan 2017: 7-8). However, these approaches of proof-based, anonymous and decentralised versions of DLTs are collectively called 'permissionless', and embody only one form of DLT. For many organisations interested in adopting DLTs, 'permissioned' ledgers may instead be preferred, where access rights are restricted to specific nodes in the network. This is similar to the difference between the Internet (permissionless), which is open-access, and an intranet (permissioned), used within a specific organisation. Permissioned ledgers may thus be completely isolated to one organisation or be open for public viewing (for

example as a transparency feature of a government department), while adding blocks or editing information is only possible for certain nodes or users (Atzori 2015: 19-20, 31).

1.3 – Uses for blockchain beyond cryptocurrency

Although a cryptocurrency is often the foundation of a DLT, the technology can also be used to digitally map, track and trade physical assets and political agreements on a global scale. For example, the technology can be used to keep public records, domain names and land deeds; store and execute insurance policies; stock market trading; and even replace government services by automating implementation of policies and so claiming to enable direct democracy. This is possible because a unit of cryptocurrency can represent anything: a 'coin' may be a unit of currency, but may just as well represent a vote, property deed, share of a company, etc. An example is the rise of Non-Fungible Tokens (NFT) to ensure the authenticity of digital artwork, which became popular in early 2021 (Lum and Clark 2021). The idea behind NFTs is that despite being easy to duplicate, an 'original' digital file could be authenticated with an accompanying token. This in turn creates a market for buying and selling these tokens of pieces of art or music. This is another reason why the technology has gathered such traction in the last few years – it creates opportunities to make anything a tradable asset, therefore allowing for the creation of markets for anything imaginable. The possibility of creating markets was not originally part of the plans for early blockchain development. For example, Bitcoin was *meant* to be a payment system – a unit of Bitcoin was intended to be used for untraceable purchases, not something to buy, hold and later sell for profit (Nakamoto 2008). The asset aspect makes the use of Bitcoin as a traded item dependent on systems of fiat money around the world, as *crypto exchanges* let users trade Bitcoin and other cryptocurrencies for their 'normal money'.

Blockchains also allow for programming limitations to where and on what a 'coin' can be spent as well as automating what happens to a unit when certain conditions are met. This is known as a 'smart contract': a pre-programmed set of transactions (or blocking of transactions) that are variable-dependent (Scott 2016: 8, 11-13; Beck 2018: 55-56). For example, a notable sector that is

increasingly engaging with smart contracts and so selected as a key area for this research is that of energy markets, where small-scale energy producers can sell surplus energy across national grids without involving traditional energy companies. These blockchain energy companies use cryptocurrencies and smart contracts to record production and usage of electricity among those connected (Diestelmeier 2019).

Many organisations, across sectors, provide a DLT as a foundation for others to build their own cryptocurrencies, smart contract systems, companies, or DAO (Decentralised Autonomous Organisation) on top of it, the most well-known being Ethereum. This means that DLT-based ventures that utilise the Ethereum network as *infrastructure* are linked to the Ethereum DLT, rather than operating completely independently. There are countless apps, games, and services currently linked to Ethereum, but there are other established similar organisations, such as Hyperledger, which was developed in collaboration with IBM. This further means that rather than users having to trust the technology of the particular systems, the trust is placed in the technology at the base layer (i.e. Ethereum, Blockchain, Hyperledger). This trust is therefore largely built on the reputation of these established organisations as reliable due to being widely used and well-known. As I will show later in this thesis, the argument usually is that the technology itself provides the reason to trust it, but does not provide an explanation as to why such organisations are necessary and why there needs to be more than one.

Regardless of the initial intentions of Bitcoin, the blockchain space appears to be increasingly pooling into two main purposes. The first is that cryptocurrencies are treated as assets rather than payment systems. This means that creators, users and traders are focusing on the 'store of value' aspect of being money, rather than the 'medium of exchange' (the third classic part of *being money*, 'unit of account' is of course also there, permanently on display on the blockchains). The main hype and goal for those investing in cryptocurrencies is to sell it later, back to fiat currency, for profit. This demonstrates a disconnect between the rhetoric of cryptocurrencies disrupting traditional money

and finance that cryptocurrencies are supposed to offer and the actual economic interests that are focused on maximising profits in fiat currencies that is are supposedly no longer needed. The second purpose is for entrepreneurs and established corporations alike to adopt the language and boast the functionalities that come with DLTs to place themselves as investable ventures, as well as middlemen that can either provide services for those who try to navigate this new market space, or to extract profit through transaction fees (usually by being the exchange between cryptocurrencies and other currencies or securities; or by selling themselves as custodians of a particular blockchain solution).

1.4 – Research questions and chapter outline

Based on this assessment of how DLTs work, statements about what they aim to solve, and claims about democratisation, decentralisation, and removal of trust, this project set out with the following main research question:

1. What are the democratic and economic imaginaries for DLTs and cryptocurrencies within the sectors[9] and communities engaging with the technology?

This overarching question is supported by the following supplementary questions:

2. What sectors and types of actors are driving the implementation of DLTs and how is the technology conceptualised within these sectors?
3. What claims are made around the betterment of society in terms of political, economic and social organisation?

[9] In this thesis, the term 'sector' refers to the wider sphere of influence surrounding an area of business (i.e. an industry), rather than the also common use for distinguishing between the private, public and third sectors of an economy. For example, a sector by the definition applied in this thesis is the finance sector, which in addition to banks, FinTechs, investment firms, accounting firms and other market participants also has some connection to sections of the academic field of economics and the various programmes offered by business schools, and is also often more or less aligned with liberal-leaning political parties and media outlets. The 'finance sector' here signifies a (somewhat loosely defined) set of shared practices, values, assumptions and historical events.

4. How can these claims, as well as the structure and operation of DLTs be understood from a sociological perspective on money and finance?

In order to answer these questions, this research takes a qualitative, ethnographic approach. I was able to secure eight semi-structured elite interviews with representatives from small, medium and large DLT-related organisations. Analysis of this data was supplemented by detailed reading of grey literature from the finance industry and direct observations from four industry conferences taking place between March 2020 and June 2021.

Theoretically, the thesis rests on a foundation of economic sociology that situates money, value, markets and technology as created and upheld by social relations (elaborated in Chapters 2-4) and which contrasts the neoclassical, Austrian school perspective that represents the general understanding of economics within much of the DLT space.

Influences on this thesis include contributions to sociological perspectives on money by scholars such as Dodd (1994; 2014; 2018), relational approaches to how monetary forms are upheld through networks and constant 'relational work', most notably proposed by Zelizer (1997; 1998; 2007; 2008; 2012) and Bandelj (2012) as well as the concept of speculative value and/or the role of expectations as explained by Konings (2018), Adkins (2017), Davis (2018), Bjerg (2016) and others. Drawing on this material, I develop a relational approach which helps answer what democratic and economic imaginaries are represented in the DLT communities (RQ1) and I also apply this relational sociology of money and finance in my analysis of the data, in particular for the topic of cryptocurrencies and other forms of money (RQ4).

What you have seen so far about DLTs has thus been 'at face value', as presented by supporters, users and idealists. However, to fully understand the wider context DLTs came from, exist in, and are trying to attract interest and investment from, this thesis also seeks to situate DLTs within wider developments in the tech industry, particularly the 'platform economy' or 'platform capitalism' (Srnicek 2014; Langley and Leyshon 2017a) and 'authoritarian neoliberalism' (Bruff 2014; Bruff and

Tansel 2018). These sociological perspectives will help to explain the organising and steering functions of dominant narratives and the influential role that economic, cultural and social capital (Bourdieu 1986: 241-258) plays in developing and sustaining these narratives. This literature will also help to further address what democratic and economic imaginaries are presented for (or driving) developments around DLTs (RQ1) and will also help address what claims are made for how and why this technology will work for the betterment of society (RQ3).

The relevance of these theoretical underpinnings became apparent from engaging with the growing body of academic and industry grey literature (primarily coming from the disciplines of computer science, economics, and engineering, and also well-established economic actors in the financial sector) that explores, applies and theorises about the impact of DLTs in their respective fields.

All these aspects and theoretical perspectives will be explored next, in the literature review portion of the thesis. This is divided into three chapters, beginning with Chapter 2, which will provide a survey of previous academic research on DLTs, cryptocurrencies, and wider developments in finance and technology. This will begin with summaries of what is being written about DLTs and cryptocurrencies in academic publications from the most active disciplines and will highlight how there is a tendency to (often uncritically) aim research directly towards potential implementations or use cases for the technology. These use cases broadly fall under three sectors that were identified as most actively pursuing or being affected by the spread of DLTs: Finance, Energy, and Law. However, although this forms part of the literature review as context for the more critical literature to follow, the material also acted as a starting point for both sampling and literature analysis in the research process.[10] The subchapter also helps to address what sectors and actors are most active in implementing and conceptualising DLTs (RQ2) and provides context for the first-hand interview and observational data to come later in the thesis.

[10] See the introduction to Chapter 2 (page 27) and the therein provided directions to relevant parts of the Methodology and Methods chapter (Chapter 5) for more detail.

The subsequent section of Chapter 2 reviews the very limited research into DLTs that has been carried out from sociological perspectives, and will demonstrate why the contributions of this thesis are addressing a gap and need in the discipline. To supplement the lack of research on DLTs specifically, the remainder of the chapter outlines relevant research into adjacent fields. These subchapters also address the concepts of 'decentralisation' and 'community', commonly used across fintech in general but DLTs in particular, and how they are (or rather aren't) defined. These latter subchapters serve to contextualise DLTs and cryptocurrencies and demonstrate the type of structures and ideological narratives that DLTs fit with both conceptually and practically. Chapter 3 brings further depth to these concepts by focusing on the role of risk, speculation and narratives in the wider tech and financial sectors, as well as society at large. This chapter is followed by Chapter 4, which seeks to explain the assumptions about money, value and economic behaviour that developments within tech, finance and DLTs are based on.

The literature review chapters will be followed by a methodology and methods chapter (Chapter 5), outlining the setting up and execution of this research project. I will provide details of and justification for the choice of data collection methods (semi-structured interviews, observation, and grey literature) as well as my ontological and epistemological positioning.

Subsequently, Chapters 6, 7, 8 and 9 form the findings and analysis portion of the thesis. Chapter 6 consists of the literature analysis data, which is focused on publications by the globally influential 'Big Four' accounting firms and their relationship to DLTs and how this has changed over time. This chapter serves the purpose of contextualising the interview and observational data by showing how 'big players' in global finance view, write about and adopt/adapt new technology. Chapters 7, 8 and 9 are primarily derived from the interview data, but incorporates relevant observational data and refers back to the contextual literature data. These three chapters will pay closer attention to all identified developments and processes, but analysed through the concepts of Trust, Democracy and Humanism, respectively. Throughout the analysis, I will also explain how different quotes and

examples from my original data relate to a suggested typology of four archetypes of actors in the DLT space.

Chapter 10 concludes by tying together all arguments made throughout the thesis as well as present my key contributions and findings. I will highlight again why it is important to critically engage with the claims of democratisation, trustlessness and fairness made by proponents of DLTs and cryptocurrencies.

Chapter 2 – Previous research on DLTs, and related developments in technology and finance

To begin the literature review portion of this thesis, this chapter will provide a review of academic literature dedicated to DLTs and/or cryptocurrencies. As will be discussed in the methodology and methods chapter (Chapter 5), most academic papers on DLTs come from disciplines such as computer science, economics and engineering, which I for the purposes of this thesis collated under the broader sectors of Finance, Energy and Law, due to their dedication to addressing issues or promoting solutions using the technology in these areas. This first section (Chapter 2.1) is therefore dedicated to summarising how academic publications aimed at these sectors treat DLTs and cryptocurrencies and will provide context and background to the more critical literature that follows. However, in contrast to the sociological and critical literature, the material discussed in Chapter 2.1 serves a purpose beyond contributing to our understanding DLTs and cryptocurrencies. This literature also formed the starting point for data collection sampling and the first level of literature analysis. The analysis of this material produced some initial findings which were later revisited at each addition of new data to the research project. For more detail on the sampling strategy employed, see Chapter 5.3; for more detail on the relationship between the content of Chapter 2.1 and the data collection process for the literature analysis aspect of the research, see Chapter 5.4.3; and for more detail on how the literature in Chapter 2.1 was approached analytically, see Chapter 5.5.

The second section (Chapter 2.2) reviews the still limited sociological research that has engaged with DLTs and cryptocurrencies. As I will demonstrate, this body of work tends to be either quickly dismissive, not addressing claims 'head on', or lacking empirical engagement with people from the DLT space, but nonetheless complements in part what the present thesis is exploring. The third section (Chapter 2.3) discusses the concept of decentralisation, a term that is ubiquitous in the DLT space, yet sees resistance to be properly defined. The fourth section (Chapter 2.4) draws attention to sociological literature that yields insight into wider developments in technology and finance and

which bear resemblances or overlap with DLT in claims and/or execution, perhaps most notably the concept of the 'platform economy'. The chapter concludes with a discussion on the role of 'community' in tech, fintech and DLTs (Chapter 2.5). The term community has been given this attention in the thesis as it is widely used in the DLT space to refer to those who follow or support particular products as well as the space in its entirety, but is often ill-defined and unaligned with how community is typically conceptualised in sociology. This section also includes a discussion of different forms of community engagement and how they relate to societal power structures.

The main purpose of this chapter is to provide context and open the way for further discussion of sociological concepts in the subsequent literature review chapters, and which constitute the theoretical foundation for the analysis of this research.

2.1 – Academic perspectives on DLTs in Finance, Energy and Law

The following section will outline some key arguments identified in academic publications on uses and promises of DLTs. The perspectives discussed in this section are from a range of disciplines, but mostly related to computer science, economics and engineering. These have been categorised by business sector, based on what the proposed or discussed DLT function or product is addressing. A common thread across academic engagement with DLTs is this 'production orientation' which is often accompanied by a lack of critical engagement with the fundamental ideas associated with DLTs. Because of this, the research that aligns with the sectors discussed here tends to approach the subject from the perspective of how to best utilise DLTs *as they are presented*. Although focal points may differ, some general trends can be seen in how the technology is approached as well as in conclusions for what its impact may be. [11]

[11] In addition, these three sectors also relate to the interview data collected for this project, as almost all of the respondents represent organisations that belong to the finance or energy sectors. No respondents directly represented the legal sector, but questions concerning regulatory and legal elements have been a recurring element throughout this research. This is not surprising, given that new technologies and marketplaces usually require revisions or additions to existing legislation, or even completely new regulatory frameworks.

2.1.1 – Finance

The most discussed use of DLTs in finance is its capacity to increase efficiency, especially in settling payments (Collomb and Sok 2016; Zuberi 2017). This utilisation does not aim to decentralise money or the economy, but to enable established players in finance to incorporate the technology. This has led to some speculation that due to the structure of finance markets, DLTs are likely to stay small, permissioned and absorbed by banks and financial institutions (Collomb and Sok 2016; O'Leary 2018; Arnold 2017). Others have highlighted that the future of DLTs depends on national regulations and definitions of what it is. This is usually a debate over whether to treat cryptocurrencies as currency or securities (Manta and Pop 2017; Eha 2017).

A second commonly stated benefit is the capacity of DLTs to provide transparency for trade deals and supply chains. Concerns are simultaneously raised, however, over how to adapt this feature to current business practices, as this entails revealing business strategies and secrets to competitors (Cai 2018; Scott, Loonam and Kumar 2017; Arnold 2017). O'Leary (2018) has highlighted that DLTs also can be used for double bookkeeping where only part of a company's activities are recorded, while the remaining business takes place 'off-chain'. DLTs can also be used for false price-signalling, where transparency and anonymity allow actors to indicate trades that are later withdrawn, or to trade with fake accounts held by the same company, in order to inflate perceived revenue and therefore also the valuation of their companies.

Aside from the impact on current financial markets, DLTs have been praised for their potential in raising funds for new businesses through creating their own cryptocurrencies that are sold, instead of offering equity, so called ICOs (O'Dair and Owen 2019; Eha 2017; Ante, Sandner and Fiedler 2018). Investors tend to treat these cryptocurrencies as securities to be sold at a later stage.

What is most striking is a common tendency to unreflexively accept the technical descriptions of how and why DLTs work, as well as the importance of decentralisation (Ferreira et al. 2018; Eha 2017; Zuberi 2017). In other words, there is little academic critical analysis from scholars associated

with financial markets and business schools of the claims made by computer science about the economic usefulness of DLTs. The explanations provided, usually similar to the one provided in the introduction of this thesis, are accepted at face value, and analysis of its usefulness builds upon these assumptions.

However, there is also a tendency to shift from ideals that stay close to these founding concepts of DLTs, to later (often within the same article) suggest implementations that require regulation or centralisation of platforms in order to conduct business (O'Dair and Owen 2019; Cai 2018; O'Leary 2018; Olowoporoku 2018). It is therefore very common to see contradictory statements about why DLTs are a good option versus how they will best be used. With starting points in the established narrative (that it is the technically derived scarcity that makes DLTs valuable and decentralisation and transparency that makes them secure) possibilities of hacking, misuse and other technical breaches are in some cases seen as too severe security risks for DLTs to be utilised in finance on a wider scale. One such example is presented by Cai (2018), who suggests that cryptocurrency nodes currently only operate honestly because it gives maximum profits, and that this practice may change if honesty ceases to be the most profitable option.

DLTs tend to be viewed as market opportunities, either as a way for existing businesses to become more efficient, or for new businesses to quickly gain funds (Manta and Pop 2017; Owen et al. 2019). Financial and technological development is treated as almost inevitable and as enabling growth of wealth and prosperity, if regulations would allow. Governments and other regulatory bodies are, perhaps unsurprisingly, typically viewed as 'in the way' of progress (Scott, Loonam and Kumar 2017; Arnold 2017). For the purpose of this thesis, the body of literature on DLTs associated with the finance sector does therefore leave a sizeable gap for discussions about democratic and economic imaginaries, and how claims about democratisation can be assessed against actual implementation of DLTs, as these topics are rarely (or never) touched upon.

2.1.2 – Energy

Research into the applications of DLTs in energy markets also rarely question claims about DLTs' technical capabilities and strengths, with particular praise given to the decentralising elements (Ahl et al. 2019; Hou, Guo and Ning 2018; Diestelmeier 2019; Giungato et al. 2017; Andoni et al. 2019). It is also often emphasised how DLTs can increase efficiency in trading and how transparency can help trace energy usage (Ahl et al. 2019; Andoni et al. 2019; Brilliantova and Turner 2018).

Similar to how DLTs are discussed in finance, there is a tendency to move quickly from the benefits of decentralisation, to suggesting the use of permissioned DLT platforms or centralised and standardised regulation of trade across energy networks (Ahl et al. 2019; Diestelmeier 2019; Giungato et al. 2017; Andoni et al. 2019). Even more so than for finance, the problem of decentralisation becomes evident. If energy is to be traded across vast spaces, between microgrids, it inevitably has to travel across the main grid. This involves some technical difficulties, such as the fact that crucial systems for accurately balancing both energy in the grid and monetary compensation are still to be developed, as well as the lack of capacity to store surplus energy (Hou, Guo and Ning 2018).

The acceptance of the typical DLT rhetoric becomes particularly evident when looking at the role energy trading is expected to play in the transition toward renewable energy. Markets are seen as the only viable route and more specifically through the concept of microgeneration and 'prosumerism' (Hou, Guo and Ning 2018; Diestelmeier 2019; Brilliantova and Turner 2018). This idea is presented in contrast to what is seen as an inefficient centralised energy market, dominated by big utility companies and with restrictions on who can act as a producer and seller of energy. Prosumerism, a term given to someone who both self-produces and self-consumes, is proposed as a solution, wherein actors with small-scale, renewable energy producing capacities (such as solar panels or wind turbines) are able to meet their own energy needs and to sell their surplus. Supporters state that this has been difficult in the past, but that it is possible to accurately trace,

account for and trade energy using DLT platforms as providers of 'third party trust' in the absence of traditional intermediaries.

Similarly, DLTs are seen as useful for communities with microgrids to trade surplus with each other through a peer-to-peer (P2P) platform as a primary source of energy, before buying from the main grid. This idea comes with an assumption that energy produced *should* be sold, and that this requires a DLT even when operating in a closed and local system (Ahl et al. 2019; Hou, Guo and Ning 2018; Diestelmeier 2019).

The above examples of both legislative and market-side calls for allowing small producers into the marketplace calls into question the motives behind this approach. If lowering emissions, expanding renewable energy and enabling transparency of markets really is the goal, then why not legislate for this, instead of deregulating the energy space? As argued by Jankovic and Bowman (2014), it is the presentation of the green revolution as a market opportunity that has caused much of the recent interest and change. This means that only for as long as green energy remains profitable will businesses be interested in it. This is supported by Monyei et al.'s (2019) discussion on how the current approach to renewable energy transition has yet to see an actual reduction in emissions.

Green investment has become an end in itself, and simultaneously, businesses involved in the transition, by virtue of the money they invest, become influential in future political decisions. This notion is made clear in many accounts of DLTs' future in energy trading; profit is seen as an essential component in projects of green energy (Hou, Guo and Ning 2018; Andoni et al. 2019).

This conceptualisation of the energy transition is also subject to a self-referential argument regarding the state of the energy market. It is suggested that because energy markets have been progressively privatised and decentralised over the last few decades, there is now a need for further privatisation to allow even smaller producers (and prosumers) to join (Ahl et al. 2019; Diestelmeier 2019; Brilliantova and Turner 2018).

It is not the case that the systems *have to* be technically perfect for trade to be able to take place. It appears that decentralisation and decarbonisation is not the main concern, but that centralised functions and regulations should be there to ensure that trade can happen. What is sought is a change to how the market is set up, not necessarily through DLTs, but which *could* be done with DLTs. Therefore, DLTs should in this instance be viewed as vehicles for the political project of liberalising energy markets.

2.1.3 – Law

The relationship between law and DLTs is perhaps the most diffuse and overlaps with both the finance and energy sectors. However, from a legal perspective, the potentially most interesting area is the status of smart contracts.

A smart contract is a pre-coded set of transactions that are executed automatically once specific requirements are met. These requirements are not always completely digital and may require information from outside sources (Yu et al. 2018; Nofer et. al 2017; Shermin 2017). Smart contracts are seen as overcoming the need for interpretation and enforcement of law, as all the information needed is coded in advance. This presumes that all eventualities concerning the agreement are known in advance and that no unforeseen events can change the fact that the contract will be executed when requirements are fulfilled. This not only requires extensive knowledge on how to code such a contract, but also knowledge of all possible loopholes.

DLTs and smart contracts may come to play an important role in the Internet of Things (IoT), where electronic equipment of all sorts are interconnected, such as a smart fridge automatically ordering replacement goods when they run out. By extension of this concept, many authors imagine the use of DLTs for the creation of ‘smart cities’ that utilise idle resources automatically across multiple systems (Yu, Li, Tian and Liu 2018; Sun, Yan and Zhang 2016). The usefulness of DLTs in legal systems is presented in the same way as in finance and energy, with praise for its secure, decentralised features, as a narrative, but for suggestions toward real-world applications they quickly shift towards

permissioned, centrally organised systems for actual implementation. This includes suggestions for IoT and smart cities, which require coordination of multiple sources of information, some consisting of non-digital components which cannot be guaranteed to be immutable. However, it is arguably not the security of the data that makes implementation likely or possible. We already trust many systems that are not secure in the way that is imagined for DLTs. Banks may be hacked at any time and money transferred out of peoples' accounts, but we still trust that our money will be guaranteed. Trust is at the core of the operation and adoption of DLT systems.

Goldenfein and Leiter (2018) have noted that at present, the standardisation of smart contracts is being entirely controlled by programmers of DLT platforms. Law in general tends to develop over time and common practice can change the status of legal documents. At the moment, smart contracts are not legally binding, but they could be in the future. It is therefore important to assess what values are reflected in the standardisation of smart contracts. Rather than being neutral, they are arguably written with particular political or otherwise strategic goals in mind and informed heavily by market logic and liberalisation. This may lay the foundation for a very particular form of justice. The programmers are also at the moment among the few who understand how DLTs work and how to code it, which adds a barrier for the public to have a say.

In this sector as well, markets and transactions are viewed as inherently non-human and that social elements distort 'natural' developments. As will be argued throughout this thesis, however, it is not the neutrality, immutability, decentralisation or any other technical feature that produces reliability, it is agreement across social networks.

Furthermore, if suggested applications will require central organisation, is there really a need (even for the purpose of providing a marketable narrative) to utilise DLTs? There are already other systems in place for keeping ledgers that have capacity for transparency. As in the energy sector, DLTs as a concept can be invoked as a way of getting governments behind a wider change in society towards further deregulation.

2.1.4 – Conclusion

This review of the most pertinent academic publications on DLTs has helped to demonstrate a lack of critical assessment of the claims around DLTs, such as what they are for and what they do. I have highlighted some of the contingencies and ideological assumptions that are implied, as a starting point for further critical engagement. This section has thus begun to answer my research questions concerning which actors and sectors are interested in and driving DLT adoption and use and has touched upon what imaginaries, ideologies and narratives they appear to adhere to. I have here highlighted the discrepancy between what it is said that the technology is and does, and how it is implemented in practice. More often than not, and for a variety of reasons, blockchain is invoked as a buzzword that hides a *lack* of disruption. Based on this assessment, the next subchapter will demonstrate why more sociological research is needed to understand how DLTs work and highlight the importance of this present thesis. The points of conceptual tension that I have illuminated are further elaborated in the following subchapters, where I connect DLTs to developments across the global economy and point to similarities between DLTs and other tech platforms.

2.2 Sociological research into DLTs

As demonstrated in the previous section, there is extensive academic scholarship on DLTs, but which tends to uncritically accept claims from the DLT space and mostly serves to promote the technology. However, there is currently very little published on Blockchain from a sociological perspective. This section will therefore start with an overview of the limited sociological scholarship that explicitly addresses DLTs, followed by three subchapters in which I situate DLTs within wider developments in the technology sector. I will argue in this thesis that cryptocurrencies and DLTs are developing along the same path as other technology-based sectors and more society-wide narratives around value and markets. In this vein, the three sections cover issues with the principle of decentralisation; DLTs as delimiting infrastructure, and general tendencies over the past few decades concerning increasingly financialised socio-economic organisation; DLTs as conforming to the 'platform'

business model; and the role of 'community' in how DLTs are framed. These topics have been more extensively explored within the discipline and will help explain the mechanisms and structures that underpin the narratives around DLTs and provide a ramp from which to spring into discussions on imaginaries and values that are implied/drawn upon within the DLT space and beyond.

Current scholarship on Blockchain from a sociological perspective includes Lawrence and Mudge's (2019) paper on the rise and fall of Bitcoin as an anti-state movement, where they focus on the shift in userbase from those who held libertarian beliefs to those who see it as an investment opportunity. Dodd (2018) has discussed the social underpinnings of Bitcoin, and how it therefore will fail in its attempts to function as a currency that sits *above* the social world. Rella (2020) has looked at the cryptocurrency Ripple and uses it to conceptualise money from an ecological perspective as technological and social infrastructure. This means that in addition to the social networks and narratives surrounding them, the materiality of cryptocurrency networks (and other forms of money) also matters to the configuration and operation of it. Bjerg (2016) has provided a conceptualisation of how we can view Bitcoin as money by applying a Zizekian analysis, comparing Bitcoin to three common theories of money – commodity theory, fiat theory and credit theory. He argues that although Bitcoin contains elements of what these theories consider an object *needs* in order to be money, it does not fully conform to either theory. Bjerg argues that this is a result of Bitcoin resembling the gold standard, but is centred around a lack of presence as a physical object; is issued by an entity that want it as payment, similar to state-backed fiat currency, but without centralised organisation; and finally that it fundamentally is an agreement of indebtedness between actors – i.e. money is credit – but which unlike money created by commercial banks does not have a corresponding loan. He concludes that all forms of money come with their own drawbacks, but also that if they are accepted into society, their logic will be accepted as part of normality and early doubts will be forgotten. This indicates that money as a concept is best approached sociologically as a system of trust, as I argue further in Chapter 4.

While this thesis touches upon all of these topics, it is also distinctly different. Unlike Lawrence and Mudge, Dodd, and Bjerg, in addition to the political views of those who support the blockchain sphere and the possibility of cryptocurrencies to work *as money*, my argument stresses the importance of the societal forces that push technological development in certain directions. Ideologies and statements framed by democratic and economic imaginaries will be situated in the particular type of movements and developments that constitute their growing userbase – the financial speculators and the tech industry.

Unlike Rella's (2020) perspective, which places importance on not just the abstract configuration, but the material dimension of money to explain value formation, I want to draw attention to how narratives and slow-moving economic structures shape the 'real world' in its image.

Some scholarly emphasis has been devoted to the importance of narratives in the cryptocurrency community, notably Faustino, Faria and Marques (2021). Through an ethnographic analysis, they have examined the role of developers and supporters romanticising the technology itself and finance in general. In particular, they have focused on how supporters have turned Bitcoin's pseudonymous creator Satoshi Nakamoto into a legendary hero, pitted against the villain character of the traditional banker. They argue that this has formed part of the wider societal language of the advent 'cashless society' (Bátiz-Lazo, Haigh and Stearns 2014; Fabris 2019) and 'digital economy' (Carlsson 2004; Bukht and Hughes 2019) with its associated unquestioned positive characterisations. They argue that the overlap of these themes has seen the general public be more accepting of the legends associated with cryptocurrency.

The insights from these studies help to set the stage for understanding how cryptocurrencies have moved from devices meant to replace cash and enable unregulated transactions to something more akin to asset markets (Scott 2016: 3). It is implied that these developments reflect both libertarian and neoclassical economic dreams of un-manipulable money (Hayek 1976), and Faustino, Faria and Marques (2021) add that the narrative of DLTs also utilises similar language to other areas in the

tech markets. These themes are present throughout this thesis as well, but I will also demonstrate how the dominant forces behind the increased use of DLTs and cryptocurrencies mobilise the language of the early supporters in order to entrench these new technologies as merely new versions of the deregulated market-creating patters already present in neoliberal economies, and in particular the form known as 'the platform economy' (Srnicek 2016; Langley and Leyshon 2017a).

2.3 – Decentralisation

As touched upon, decentralisation is an often-invoked term regardless of how decentralised the solution on offer is. This is not only true for traditional financial institutions trying to get a foothold in this new technology space, but decentralisation is problematic as a central pillar for DLTs in general. For example, there are only a few well-known cryptocurrency tokens that are accepted as payment for services. Bitcoin is after 15 years still by far the biggest cryptocurrency (around half of the total cryptocurrency market as of 2024 (Reynolds 2024)), and Ethereum is still by far the biggest provider of infrastructure for the development of new DLT solutions and cryptocurrencies. A few countries have warmed to the idea of accepting cryptocurrencies, most notably El Salvador, which in 2021 announced Bitcoin as a national currency (Tidy 2021). As this only applies to Bitcoin, it is a further example that the DLT space itself is not very diverse or 'decentralised'. Other, smaller cryptocurrencies and tokens can of course be traded on online exchanges from anywhere in the world, but this only places the centralisation and intermediation with the exchange platform instead.

Decentralisation is thus used as a buzzword to invoke immediate positive connotations, in order to increase expansion and reach. The idea of central control is shunned, even among DLT companies that effectively centrally control everything on their Blockchain, apart from validation of transactions that is spread out across a few nodes. From the perspective of how particular interests are embedded in the design, decentralisation should be seen as shorthand for deregulation, liberalisation and financialisation.

Discussing decentralisation, Zuboff (2019: 15) points to the assumption and illusion that being connected automatically means more democratic, inclusive and social. This idea of decentralisation as inherently good has meant that it has not been forced to be defined. Langley and Leyshon (2017b) make a similar argument concerning claims from the crowdfunding space of being 'disruptive' and 'democratising', where the inclusion of 'the crowd' seemingly makes it an unambiguously positive alternative to traditional markets, a claim which is rarely clearly explained or called into question.

Decentralisation in the DLT space is used to mean many different things. For example, many DLT companies use the word decentralised when they mean distributed – that all separate nodes still are connected in a grid, as opposed to the formal definition of decentralisation where there are multiple central nodes with off-shoots connected to them, and then connections between the nodes, but not each of the off-shoots, as demonstrated by Figure 2 below.

Vitalik Buterin, the inventor of Ethereum produced three points to determine decentralisation:

1. Architectural: 'How many physical computers is a system made up of?'
2. Political: 'How many individuals or organizations ultimately control the computers that the system is made up of?'
3. Logical: relating to 'interface and data structures'; 'if you cut the system in half, including both providers and users, will both halves continue to fully operate as independent units?' (Schneider 2019: 275)

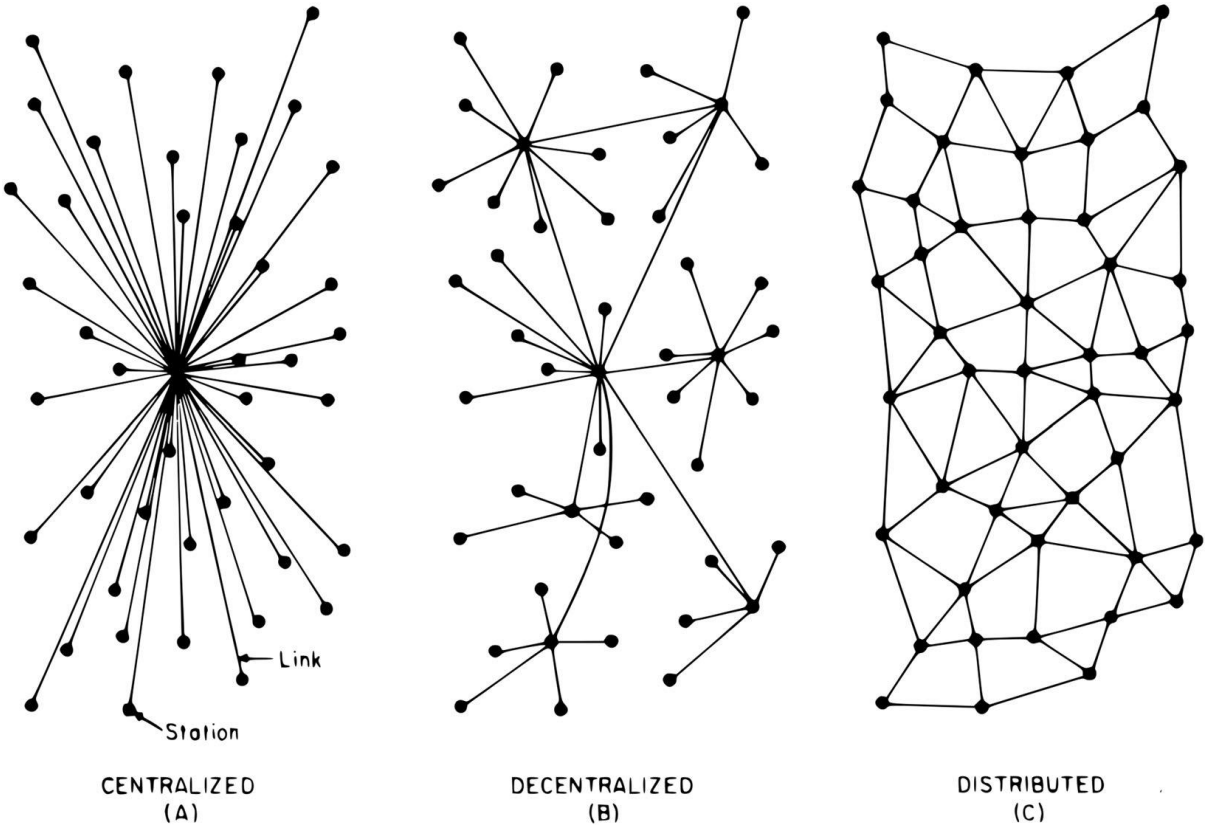

Figure 2: Different types of networks[12].

If this definition is applied to many types of DLTs, most of them would be considered quite centralised. When particular systems become widespread enough, it also means that alternative solutions are used less. Despite claims of that particular system being decentralised, it would still mean that the overall power over that particular service or use is centralised to that solution.

Building on this representation, what I argue here is not just that DLTs are no more decentralised than previous structures, but that previous structures were actually *less* centralised. It follows patterns of the wider tech community, where for example Google has replaced the hundreds of search engines that were widely used in the late 90s and early 2000s; Amazon replaced thousands of independent shops and bookstores; and Netflix replaced practically all video rental services (Daub 2020). If a decentralised system becomes compulsory, it is oppressive authority itself. The more

[12] Image available from Schneider 2019: 274

reach a DLT solution or platform has, the more power it obtains, and the less space remains for alternatives.

Furthermore, many of these DLT companies are backed by venture capital or are working in collaboration with established industry giants, which should throw some doubt on their status as disruptors and decentralisers. It is especially interesting that many DLT supporters believe that the space will not become truly big until 'the institutional money arrives' and is invested in blockchain technology. As will be demonstrated in Chapters 7-9, providers of more centralised DLT services (including several respondents during my fieldwork) acknowledge that the sector *has to* compromise for widespread adoption to happen, meaning that they centralise control over their product so that they fit within current power structures, at least until they are established.

It is also interesting that although the language suggests that DLT companies will basically run themselves, Schneider (2019) highlights that software communities tend to congregate around 'benevolent dictators' that act as gurus and key decision makers for entire fields.

What all these examples demonstrate is that centralisation *will* happen in some form, but if it is not done with intent and accompanying scrutiny, it will centralise according to the tendencies coded in – which is the type that benefits speculative finance, liberalisation, and deregulation in the name of neoclassical economic narratives. The 'democratic features' in a DLT is without accountability and enforcement, which means that the monopolies they generate will be hard to protest, make complains about, or even locate once they are in place.

Decentralisation can thus mean many different things, and is in practice mainly as a rhetorical tool, but Schneider (2019) demonstrates that the indeterminacy is helping DLTs gain traction as a whole. This is because as long as all possibilities are up in the air and do not collapse into one specific reality, the word 'decentralisation' is holding all the different promises at once. Similar to speculative value (which will be elaborated in Chapter 3), it too has value based on promises of *a* future that eventually will change into *a* reality.

As expressed by Schneider (2019: 273) 'the humble nobility of decentralising allows them to justify their grand interventions as at least reducing concentrated power, thus preventing further grand interventions in the future by others.' This rhetoric also makes all projects need to appear decentralising or having these features to be appealing. Decentralisation does not automatically lead to democratisation, market equilibrium or increased freedom and access for the average person, especially since these narratives are not followed in practice. If we assume that the design of the infrastructure leads to particular patterns of wealth accumulation, it is important to assess what those patterns are.

2.4 – DLTs as delimiting infrastructure, following patterns of financialisation and authoritarian neoliberalism

In addition to different infrastructural choices around decentralisation, and that the technology operates on top of existing infrastructure such as electricity grids and the internet, I argue here that DLTs themselves are also operationalised as infrastructure. By this, I mean that development choices can be used to steer action according to the logic, narrative and ideology of the service provider – infrastructure that delimits the possibility of alternative uses and organisation.

For example, Rella (2020) highlights in his study of the cryptocurrency Ripple that it is not only the belief in the 'story' of a cryptocurrency that keeps it afloat, it is also steered in certain directions based on its material design. Political and moral values are designed into the DLT structures, but this not only shapes what they are used for, it also limits what they can do. For example, Lawrence and Mudge (2019) argue that Bitcoin was meant to be earmarked for anti-state social movements, where the ideals of Austrian school and neoclassical economic theory are implied in the design of Blockchain technology (what these theories represent and what the impact of associated assumptions are will be explored in Chapter 4). They argue that Bitcoin is a performative vehicle for these particular theoretical assumptions and ideals. This makes cryptocurrencies like Bitcoin hard to represent anything other than the values of their creators. Another example of this, but outside of the DLT space, is when New York city planners, Robert Moses in particular, designed bridges over

the roads to the beaches and resorts intentionally too low for buses to pass under them, with the intention of keeping the poor out, and in particular ethnic minorities (Caro 1974).

The choices made in the design of DLTs do not only shape outcomes, but also limit the potential use and imaginations of those who use them. Projects that aim to subvert the fundamental elements of current economic organisation, but which follow the same assumptions about value formation and assume neutrality of markets will find it hard to avoid reproducing exclusions and inequalities of the current systems. The language of freedom and openness, with DLTs portrayed as conduits for creativity, does not recognise the limitation in its own setup. It can only allow operation based on its particular fundamental economic assumptions, and nothing else[13].

Another basic assumption is that the only thing worth protecting is a perceived neutrality and letting markets have their way (also reflected in the literature reviewed at the start of this chapter). The main objection someone adhering to this perspective may have to financial markets is the reliance on credit money without reserves. Limitations of potential uses is therefore not a problem, as they hope to eliminate just that – the ability of any person or institution to use a monetary form for anything else than as a mediator of relative inherent values.

For the purpose of their narrative, though, this limitation of potential uses and restrictions on imagination are rarely considered or acknowledged. The main problem with these economic models is that people don't behave as they *should*, while those models exist in the first place because they are meant to reflect observed economic behaviour. Mirowski (in Lash and Dragos 2016) shines a light on this paradoxical relationship between the fundamental belief of neoclassical economics that the market creates equilibrium through actors' *natural* profit-maximising behaviour, while behavioural economics is trying to anticipate and *change the actual behaviour* of actors, when it seems to be going against what is 'best for the market'. There is a simultaneity of being against

[13] From a neoclassical economic perspective, the main issue was never to remedy any inequalities or to be truly inclusive, as the only inequalities that this perspective allows for is that of information asymmetry.

manipulation of markets and actual manipulation of markets. Furthermore, Mirowski argues that modern neoclassical economic focus on 'designing markets' is itself evidence against their own cornerstone that all markets are alike due to their fundamental features. Having to possess skill in creating markets, suggests that they do not automatically reach equilibrium. It also goes against the fundamental belief that no person is smarter than the market.

Although orthodox economic perspectives were a big part in the initial vision for cryptocurrencies and their role in anti-state, pro-market ideology, this shift to market design and information processing, rather than resting on the merits of the profit-maximising individual also seems to be reflected in the DLT space. Markets are being designed to make economic behaviour fit the models, rather than the other way around, or companies and organisations are expected to accommodate blockchain technology, despite claims that it is a disruptive force on its own merit (which will be discussed further in the analysis of publications by the 'Big Four' in Chapter 6).

The reasons for this discrepancy are informed by particular political goals and the historical development of our economies. Over several decades, the deregulation and liberalisation of society has resulted in an increased level of financialisation of everyday life, where the citizen is seen as an investor (Van der Zwan 2014: 111-114). In this process, new financial opportunities have been introduced to the wider public (such as mortgages (Langley 2008), financial derivatives, payday loans and purchases on credit (Montgomerie 2006), as well as stock market trading). This is often referred to as the *democratisation of finance* and has led to expectations on the individual to act upon these 'opportunities' and be a risk-taking and calculative curator of their own money (Van der Zwan 2014: 114-115). Discourses and narratives thus transfer the responsibility of economic success from society to the individual. This matters for DLTs, as the opportunity to invest in cryptocurrencies 'before it is too late' similarly expects individuals to not only get involved in using the technology, but as investors too.

Furthermore, Adkins (2017: 455-456) argues that the mortgage market has seen a shift from expectations on customers to 'pay off' loans at some point in the future, towards a focus on customers merely meeting regular instalments and interest payments. These changes to structures and timeframes of mortgages coincides with changes to what constitutes the lending institutions' main income source, which is no longer the loan itself but the bundling and sectioning of multiple loans for sale as securities on an international scale. The disappearance of long-term planning for debt management and reduced rigorousness of assessing mortgage-takers financial situations results in many loans never being paid back. This shift also has important contingencies through this engagement of loans in speculation (which will be covered more extensively in the Chapter 3). When a loan makes more money for the bank as an asset this means that any type of debt forgiveness, or even simply if loans were being paid off ahead of schedule en masse, would cause the speculative value of the loan over time (inclusive of interest) to no longer be a credible valuation. This causes a necessary revaluation at a lower price and would cause the bank to suddenly operate with much reduced solvency.

Mellor (2019) further highlights that as banks create money without pre-existing account, but demand money back with interest, the money coming back to the bank will always be of larger quantity than was created. Because states and central banks are increasingly reluctant to introduce more money to their economies, this also means that the amount of debt outpaces money in circulation on a systemic scale and the only way the economy is 'growing' is by extending credit indefinitely.

In addition to financialisation and changes to debt expectations, Bruff (2014) argues that what has shifted since the early processes of financialisation is the more recent development of 'authoritarian neoliberalism', in which failings of the market have caused a lack of confidence in the economic teachings, but are still being carried out due to the complete investment of the state in this neoliberal logic. Through policy choices and development of general consensus, a narrative has been

produced about the indispensability and essentiality of the market as it is. It is through the lens of this logic that banks were not only allowed to become 'too big to fail', but also why the very idea that they are 'too big to fail' was created. By claiming that any other economic order would lead to disaster, neoliberal ideology, as expressed by the market and the state in unison, is holding the public hostage. This was particularly evident in the face of the financial crash of 2007-08 (Demyanyk and van Hemert 2009), where certain practices in the increasingly financialised and securitised mortgage sector were evidently behind the crash, but the financial institutions and banks that were operating and benefitting from it did not have to take the final responsibility.

The contemporary authoritarian elements of the ideology caused leaders and even the public to believe that the state had to take the responsibility and the accompanying economic hit. Despite the increased costs, neoclassical doctrine states that government spending should not be too frivolous, so ultimately the public had to pay the bill through austerity measures. As a result, there was no real reformation of any practices (Berry, Lindo and Ryan-Collins 2016) and instead increased restrictions on government spending and subsequent blaming for the harsher economic climate on the irresponsibility of people who take on credit (Bruff 2014: 114-124). As demonstrated by Konings (2014: 83-84), the main problem with neoliberal logic is thus not that the state gives exception to powerful entities and bails them out, but that speculation and subsequent austerity is now the core logic of neoliberal economic order.

Interestingly, despite the strong role of the state, the narrative stays in line with neoclassical economics, with emphasis on market freedom and minimal state involvement in the business of individuals. This further exemplifies the discrepancy between ideology and practice: a narrative that emphasises that free markets and individual responsibility is the best way to organise society, while markets in reality are completely intertwined with, created by, and reliant on state power to uphold the economic structure.

2.5– Community and the platform economy

With the development of our financialised, neoliberal society as background, and despite the promises of DLTs to be democratic alternatives to traditional solutions and structures, DLTs often mimic already ubiquitous business models that are at odds with their own promises. As I have touched upon earlier, many DLTs are built with the ostensible goal of providing decentralised/distributed platforms upon which community members (and clients) can build their own apps, cryptocurrencies and contracts, or at the very least to utilise the secure and transparent network to facilitate services. At face value, these kinds of statements suggest that the systems decentralise economic, legal or social procedures almost automatically.

However, following the works of Srnicek (2016) Langley and Leyshon (2017a) and Hicks (2020), on what is being called 'platform economy' or 'platform capitalism', this subchapter will discuss how DLT organisations have a tendency to work along similar patterns of operation as others in their sectors. This includes a focus among tech companies on occupying strategic spaces within an economy and to monopolise (or attempt to monopolise) the collection of certain types of data in order to become indispensable infrastructure to societal functions. The subchapter will also situate the concept of 'community' in relation to platform capitalism in general and DLTs in particular. As we have already encountered in this thesis, community is a term often used but rarely explained in descriptions from and about DLT companies, decentralised services/products and new initiatives from supporters of DLTs. I will therefore provide a theoretical account of how 'community' could be understood in this particular context, which will be explored further and analysed in relation to my findings in Chapter 9.2. Furthermore, this subchapter will begin to explain how similarities in operation between platforms in general as well as DLTs depend upon a similarity in understanding of economic activity and the nature of value and money, a topic which will be further developed in Chapter 4. Right from the outset, however, it is important to remember that one of the main reasons that DLTs resemble already established patterns and organisational structures in the financial world is because they share an overarching narrative about the neutrality of markets, the

need for money and economics to be calculable, predictable and suitable for 'betting' on imagined futures.

2.5.1 – The platform economy

What characterises the platform economy is first and foremost its dependence on recent innovations in digital technology, placing it within what is being called 'the digital economy' (Srnicek 2016). Srnicek highlights that 'digital' does not only include companies that operate solely online, but suggests that most companies today rely on some kind of digital technology for certain elements of their operation, such as keeping records of stock and customers, online sales, accounting, etc. 'Going digital' has become the goal and 'the future' in many sectors – cities should be smart (Batty et al. 2012), businesses disruptive (Schiavi and Behr 2018), workers flexible (Hill et al. 2008), and governments lean and intelligent (Srnicek 2016: 3). Platforms have sprung up as a 'new' business form within the digital economy.

Srnicek (2016: 36-50) divides platforms into two categories, one consisting of start-ups and the other of large, multiservice corporations. Start-ups tend to strive for 'slim' organisation, meaning that they operate with low overheads and a growing reliance on outsourcing their labour and operations. They often require large amounts of venture capital investment and can run for years without making a profit. This includes the likes of Uber and AirBnB, companies that under the moniker of 'sharing', effectively have removed the need to have almost any formal employees with labour rights, instead pioneering a model of self-employment and franchising to keep their operating costs and responsibilities as close to zero as possible.

The other form of platform, the large multiservice corporation, may have larger workforces than the start-ups, but still small workforces in comparison with manufacturing giants. This category includes some of the highest valued companies in the world: Google, Facebook, Amazon and AliBaba.

What both types have in common is that rather than actually being new types of markets and economic orders, they follow classic capitalist tendencies of exploitation, exclusion and competition.

The increase in the platform as a business model is argued by some scholars (Srnicek 2016; LiPuma 2017) to be an effect of how many modern economies have developed over the last few decades, what Srnicek calls 'the long downturn' (2016: 9-13). He argues that a decline in manufacturing expansion with simultaneous overproduction, as well as bubbles and crashes in many traditional investment markets has led to restless cash looking for opportunities. Similar to Srnicek, LiPuma (2017) puts much of the emphasis on idle capital, which separated from production has been looking for new markets. This development for capital investment has also been greatly helped by governmental support in the form of relaxed monetary policies and low interest rates, tax evasion through taking advantage of digital business' global reach, as well as corporate savings from lean business models, and spending cuts.

Small platforms have benefitted from these 'restless wads' of money, and are in this sense 'the latest thing' to be pumped up by corporate money, what Mazzucato (2016: 98-118) calls 'impatient capital', as opposed to long term (state-led) 'patient' investment. Among these platforms are many DLT start-ups, eager to convince and attract traditional financial institutions to open their eyes to digital assets and DLT services.

The main goal for most start-up platforms (DLT-based and otherwise) is to be seen as indispensable for a particular societal function. This can for example be providing the hardware and trading platforms for a big roll-out of prosumer oriented renewable energy projects; the blockchain for a new smart meter system; a bundled cryptocurrency with a new financial service; or a currency and digital asset exchange.

Much like other investment markets, the vast amount of venture capital that goes into the more successful ones are seen as insightful bets on which companies are going to make it, and a way to make the idle capital productive. In many cases, the questionable 'success' of such a business, like Uber, that is yet to make any profit, shows how far investors are willing to push something in order to monopolise that particular market. For example, in an effort to outcompete not only other

platforms but also traditional taxi services, Uber gets regular cash injections despite continuously running at a net loss[14]. The loss in 2019 alone amounted to $8.5 billion (Uber Technologies 2020). This strategy is often called 'growth before profit' (Srnicek 2020).

Many DLTs also rely on initial and continuous investment, but this may take the form of what is called an Initial Coin Offering, or ICO. This is akin to an IPO (Initial Public Offering), which is when a company goes public on the stock market and make shares available for purchase. For an ICO, however, it is not shares but the first mint of a cryptocurrency or token that is offered. These coins may be limited or unlimited and act to an extent much like shares, but rather than getting part ownership of the business, the buyer in an ICO only gets ownership of units of currency that rests on the success of the appeal of the company, and will thus only increase in value with increased interest in the token regardless of how much profit the company is making. Several ICOs in the past few years have turned out to be outright scams, so called 'pump and dump' schemes (Tiwari, Gepp and Kumar 2020), where the issuers conceal a lack of product, funds or even business plans but attract investment and then keep the invested money in return for soon useless tokens that they knew would fail.

Unlike start-ups, who try to capture and monopolise a particular service, big corporations like Google, Amazon, Microsoft, Facebook and AliBaba are aiming to capture as many markets and types of data as possible (Srnicek 2016). Where monopolising tendencies in the manufacturing era largely consisted of buying out competitors and/or supply chains, these corporations buy other types of tech companies, to spread out their coverage as wide as possible, which has led to these giant corporations increasingly resembling each other[15].

[14] Uber had its first profitable year in 2023, seeing a profit of $1.1 billion (Hawkins 2024), but this comes after a nine-year consecutive total operating loss of $31.5 billion (Waters 2023).
[15] For example, Microsoft buying LinkedIn, Google buying Youtube, Facebook buying Whatsapp and Instagram, etc.

The monopolising, and wide-net catch-all operations have resulted in only a few companies becoming really big. These companies cement their roles by offering very specific types of data to advertisers and to users of their services. In order to offer as complete a picture of a user as possible to an advertising client, the large platforms want users to never leave their grasp. This is for example one of the main reasons that Amazon introduced its Alexa – it provides more everyday data to extract from users, but it also steers some of users' information searching activity away from Google, which to many would be the first choice. This is also the motivation behind these corporations offering everything from internal marketplaces, payment systems, product comparisons, search engines, and chat/messaging functions, all within the same ecosystem. At the moment, the advertising money is big business – as Srnicek (2016: 94) notes: '… in 2016 Facebook, Google, and Alibaba alone [took] half of the world's digital advertising. In the United States, Facebook and Google receive 76 per cent of online advertising revenue and are taking 85 per cent of every new advertising dollar.'

The wide range of services is pitched to users as being for the purpose of convenience, efficiency and ease of use, but it also draws users into what can be likened to digital company towns. Furthermore, this catch-all tendency stretches beyond individual users. For a company in any sector that is using a particular platform solution to run their business, it matters how monopolised that space is. With platform corporations tightening their grip on their users and limiting cross-platform compatibility, it could become a costly affair for a business to try and change service provider.

For businesses and individual users alike, those who own the underlying infrastructure set the rules. A platform also grows stronger with the number of users it has, as network effects apply both ways - with the number of users and the number of sellers that utilise the underlying infrastructure. Just like with Uber, Amazon has been shown to operate in target markets at huge annual losses, in order

to capture and monopolise those spaces[16]. Likewise, Facebook has created a free suite of selected websites and services called 'Free Basics', currently available in many so-called 'developing countries' (or emerging economies). It is sold under the guise of being an introduction to the internet (as if people in these countries have not heard of it), while it is actually only offering the Facebook ecosystem sites and others who have paid to be featured. With many people opting to utilise this offer of free internet access on their phone, they are effectively sucked into a completely closed digital ecosystem. Furthermore, most of the companies that have paid to be featured are English-language-only, data mining multinationals. Some countries get access to only a few regionally significant sites, such as news sources. Often, only headlines are visible within Free Basics, and clicking on links to learn more sends a warning that you would be leaving the free site. Advocacy groups have dubbed the venture 'digital colonialism' (Solon 2017).

Furthermore, the commodification of private data is sometimes facilitated by government programs, particularly in economies that are looking to increase their influence in the global marketplace. For example, India has traditionally been focused on fostering local companies, while simultaneously liberalising their economy since the 1990s and increasingly opening for foreign investment (Agrawal 2013). With the stated intention to create an efficient system for people to gain easy access to government services such as welfare payments and micro-credit, the Indian government has created a government-owned database called IndiaStack, an infrastructure system that hosts a collection of software platforms based on top of the national biometric and demographic population database Aadhaar and its associated ID card (Hicks 2020, 330-331).

However, despite being pitched as a government project, the database was developed by people associated with a large Indian multinational IT company, Infosys, as well as a national software industry body called iSpirt. Despite the stated intention of giving citizens access to digital

[16] Amazon has rolled out massively in India over the past few years. Although they are continuously growing, the marketplace arm registered a net loss in the region of £580 million for 2018-2019, against revenue of around £795 million (The Economic Times 2019).

identification, their personal information has subsequently been sold to companies all over the world. The Indian government allows companies to create software on top of IndiaStack that bundles the digital identification system with other terms and agreements that more or less force users to also give up their data if they want to use the service. This is a good example of how the provision of infrastructure, regulations and even supplies from the state underpins privatised profit extraction (Hicks 2020).

In response to this exploitation of sensitive information, the Supreme Court of India ruled in 2018 that private company access to Aadhaar data was unconstitutional. However, India is a country of over 1.3 billion people, and the data of all citizens centrally stored and organised is a valuable resource. The database even removes the need for interested advertisers and other clients to try and puzzle the different strands and traces of data together to form a whole digital person. It is easy to see why the government soon after the ruling introduced new regulations that effectively ensure the continued legality of businesses exploiting the database. The database replaces administrative work otherwise entrusted only with civil servants, by insisting on the security and infallibility of their technological solutions.

Both small and large platforms see the majority of their operational income from two sources, the advertising/data sales discussed above but also from 'rent' when using their infrastructure (Langley and Leyshon 2017a). DLT platforms are no exception and are just like other platforms the intermediaries in commercialised circulation of information (Käll 2018). Their monopolised spaces allow them to put profit-generating transaction barriers between different actors and become indispensable intermediaries.

These descriptions of how platforms in general operate provide useful background to understanding how many actors entering the DLT space approach the technology as a business opportunity (and therefore provide context to the data analysis in chapters 6-9). For many DLT platforms, the focus is on the capacity to extract transaction fees and rent, as most DLT platforms at this point are not as

reliant on advertising money as other tech platforms. In the case of both small and large DLT platforms, the benefits of monopolisation thus encourage them to hinder cross-platform compatibility. Regardless of stated aims of many DLT companies to pursue openness, transparency, open-source coding and community participation, the main target is to make profit. While a company can make some money from the increased value of their token, the value of closing off the space to competitors and collect transaction fees from those who use the platform will be hard to ignore. As argued by Nelms et al. (2018), these companies reframe these monopolistic situations as 'social', to create a notion of a 'just us' economy. Rather than being open and decentralised ways of *sharing* they are closed exchange relationships within a rigid structure that has little room for negotiation[17].

However, DLTs are not only used in monopolising, infrastructure-providing tendencies for start-ups, but are increasingly playing an important role in the enclosing of digital ecosystems for tech giants as well. Facebook announced Libra during 2020, a cryptocurrency backed by a collection of fiat currencies. It was heavily criticised and later revised to be only backed by the US Dollar. To distance the new currency from the critical headlines involving Libra, the name was changed to Diem ahead of its launch in 2021 (Wilson and Shroeder 2021). A company-owned and operated currency like Libra/Diem would allow a corporation like Facebook to contain both sales, payment system and the currency itself within their control, and other large corporations may follow their lead[18]. At the time of writing, many countries tax the trading of cryptocurrencies at the point of being sold for fiat currency. Allowing platform users to buy services with the corporation's own token puts the taxation moment on the user that buys and sells the currency on an exchange instead of the company.

[17] In conversation with an Uber driver in Birmingham (UK), I was told that their local union branch had managed to circumvent Uber's efforts to not allow drivers to connect with (or even know about) each other by simply ordering as many food deliveries and rides as they could to their agreed meeting place and then inviting all drivers who turned up to join the union.

[18] For this particular example, the project eventually fell through. In January 2022, the project was abandoned and Facebook (now under the name Meta) sold the project (Baker, Hamilton and Kharif 2022) to a company that subsequently wrote off their investment in January 2023 (Gerken 2023).

For a government to be able to tax a purchase made with a corporation token would require them to also acknowledge the token as currency. Governments may work around this issue and bring out specially designed policies for this type of business, but this is likely going to take time, and the corporation will have made significant profit in the meantime. More importantly, the incorporation of a payment system into an increasingly wide-covering array of services and goods creates a loop of consumption that keeps as much as possible within the realm of the company. For example, if a user already holds a significant amount of money in a hypothetical Amazon currency and needs to buy some new electronics, books or food items, they may choose to buy all these things from Amazon rather than going to a shop or buying it on another website.

The more unique and non-cross-compatible infrastructure a company puts in place, the more users and clients are locked into that specific intermediary ecosystem. The freedom of choice that people enjoy concerning what technology to use only practically extends to the level of weighing alternatives against the apparent inconvenience of not using what most others are using. To a large extent, even tech giants are at the moment reliant on the shared fundamental infrastructure of the internet. However, Google, Facebook and Microsoft are all looking into putting down their own internet cables, further entrenching the enclosing of their respective ecosystems (Srnicek 2016). The praising of digital technology as a social leveller through the virtue of the inherent openness of the internet (a common trope in DLT communities) is thus about to face a challenge to its very core.

2.5.2 - ‘Community’ and the DLT space

It is not just reliance on concepts like sharing between members that helps strengthen a closed ecosystem. The idea of sociality is in many ways explicitly integral to upholding a platform or DLT venture. This is the reason behind the ubiquitous referencing of ‘community’ in tech in general, FinTech in particular and also for DLTs. Interestingly, as with other buzzwords discussed throughout this thesis ‘community’ is a seldom defined concept and invokes a multitude of interpretations. Given that in the DLT space, where actors are dispersed and often anonymous, it is worth qualifying

what it means to be a community and to establish how the concept of community will be treated in this thesis.

Wright (2022: 47-48) argues that community often is portrayed as an unequivocal 'good' and progressive force (despite evidence of the contrary sometimes being true) and that cohesion is threatened by fragmentation and individualisation. As argued by Bauman (2001: 141-143), the trade-off between security and liberty is coupled with the 'warmth' that the in-group offers and a reassurance that the members are protected from dangerous outsiders. Discussions around the loss of community in sociology span from ideas about gemeinschaft (community) vs. gesellschaft (society) (Tönnies 2002) where it is presumed that society has fundamentally changed and so have our relationships to each other, to a mere move from location-based community to one that spans space and transcends traditional social boundaries (Wright 2022: 54). What 'counts' as a community is in other words up for debate.

In contrast to ideas about community disappearing, Bluhdorn and Deflorian (2021) discuss how solidarity and community composition has *changed* throughout the 20th century. They argue that the shape new, or re-politicised, social causes take has changed in accordance with changes to how the individual is expected to relate to others. As discussed previously, while some reactions and protests to the financial crisis of 2007/08 seemed to herald the return of calls for democratisation and against the unsustainability of the current systems, we have also seen a rise in right-wing authoritarianism. Bluhdorn and Deflorian (2019) see a similarity between the right-wing authoritarians and the recent climate-based protest groups, such as Extinction Rebellion, in that they are not actually protesting neoliberal dominance, but rather stay in line with the idea that these issues are depoliticised. Demands are made as non-negotiable and without anchoring to societal transformation. Scientific facts are also presented as non-negotiable, and therefore neutral and sound influences on policy. It makes societal change and progress seem as an apolitical or post-political development along a continuum in the same way the classical economists view market equilibrium and technological

advancement. Calling for evidence in political debates has thus become a way of shutting down discussions.

Simultaneous, though, is a shift towards equating democratisation with emancipation and a broadening of what an individual is expected to emancipate themselves from. Bluhdorn and Butzlaff (2020) argue that there has not been a shift to post-democracy, but rather that democracy has shifted. What may have stagnated and led to the calls for the post-political era was the consensus of neoliberalism about the necessity of the dominating role the global market plays – in other words the success of the 'end of history' narrative makes it seem as if politics as a whole has reached its terminal. Instead, they argue that high political engagement both in elections and alternative political movements demonstrate that democracy is not in crisis in the way that is normally raised in those debates. At the same time, however, we are not seeing a return to previous ways of democratic engagement, such as the poor classes rising up, or calls for participatory democracy, but a new form of democratisation that is moving away from deliberation, and sees groups rather than calling for debates, urging immediate action. In the case of climate politics, for example, this includes '…calling on the state and its policy experts to translate, with no further delay, scientific findings into effective policy.' (Bluhdorn and Butzlaff 2020: 371) Bluhdorn and Butzlaff argue that a combination of neoliberal thinking, consumer culture, digital developments and behavioural economics together have created new understandings and forms of participation, which results in a responsilibitsation of consumers, data-mining to inform policy and managed behaviour 'guided by choice architects aiming to correct erroneous beliefs of citizens about their true best interest' (Bluhdorn and Butzlaff 2020: 371).

Parallel to this, the closing off of democratic engagement is also the result of a narrow definition of what is considered to be the own community. Bauman (2001) argues that closed communities that are united by proximity have become increasingly difficult with globalisation and the instant access to information through the internet. But more importantly, community is more an ideal that is

referred to rather than an actual configuration. A community is a sacrifice of freedom in exchange for security. For this to happen, the in-group has to be defined and rules put in place to explain what is acceptable and what is not.

When the pendulum swings in favour of individual freedom over community, and individuals are encouraged and expected to free themselves of the oppression of the commons, Bauman (2001: 58-59) suggests, that elites are the first, and often only ones, to *emancipate* themselves from the responsibilities of society. Those who have assets and also know how to move them and themselves around are in a much different position from those who depend on salaried income on a regular basis, all while arguing that they have merely seized an opportunity that was readily available for all to see.

> 'The idea that merit, and only merit, must be rewarded is readily reworked into a self-congratulatory charter with which the powerful and successful can authorize generous benefits to themselves from social resources. The society open to all talents soon becomes for practical purposes one in which failure to display special ability is treated as sufficient grounds for consignment to a life of submission.' (Bauman 2001: 59)

Of course, all participants in the world are dependent on the social reality they exist in, but this denial, or declaration of the post-political, post-democratic gives imaginary room for arguing that 'society' is holding everyone back on equal terms.

Komporosos-Athanasiou (2022: 120-123, 146-147) provides us with a slightly different perspective on the change in community composition and momentum. Similarly to the points argued by Bauman (2001) he agrees that communities can now be more loosely defined and temporary and may lack the level of intertwining between members that we commonly associate with the term community. For example, communities can form online around a single cause and said cause can have little importance compared to the acts *being* anti-hegemony – the actual goal of that community. These actions are often interpreted as being irrational and destabilising. However, it is not only liberals and

economists that view actions that go against the ideal of the rational individual as irrational, emotional and/or conspiratorial. Critique from the left also tends to (perhaps inadvertently) speak to the same consensus about rationality in its condemnation of populist community movements, especially when calling for politics based on 'the truth' in contrast to far-right populism's reliance on lies and emotion. However, Komporozos-Athanasiou (2022: 10-12, 30-38) also argues that the increasing levels of uncertainty that citizens face in their lives, touching everything from economic to environmental, political to social matters, is forcing them (or leaves them little choice but to embrace) speculative positions. The temporary communities mentioned above and the general shift towards individualised emancipation ties in with this new form of social association: the 'speculative communities'. Komporozos-Athanasiou argues that beyond action groups trying to challenge hegemonic values, this category includes a wide range of groups that one can 'belong' to that are not focused on gaining control or having power or even political influence over said values or the status quo. Instead, the actions of speculative communities tend to be with the aim to disrupt and 'sowing chaos to reap power' (2022: X, 136-147) – to blur the lines and make the expected harder to manage. If speculative finance pretends to aim for certainty while exploiting uncertainty, then the actions of the speculative communities make the expectations that successful exploitation depends on harder to gauge. This reflects a mode of operation that is typified by what he calls 'Homo Speculans', the successor to Homo Economicus. I will discuss this concept further in Chapter 3.1, in relation to the characteristics and role of 'the speculator' in contemporary society.

The above examples reflect ideas about changes to how communities operate and what purpose they fill to members and to society at large and point to the difficulty in establishing what constitutes a community. There can also be moral or political motivations behind classifying something as a community or not, such as who to include for specific policy implementations (Wright 2022: 46-48). For the DLT space as a whole and for individual DLT projects, there are also several layers of community simultaneously at play, all with different characteristics and varying degrees of 'tight-knittedness'. The term community is usually invoked to conjure images of

belonging and working together, but as discussed earlier about how ‘sharing’ and ‘community’ is used by platform providers, developers and supporters are encouraged to feel part of a shared experience, while their labour is exploited for the profit of those who host or own DLT platforms and services and has the secondary purpose of isolating users and supporters from other platforms.

Despite this, there is possibility for resistance within aspects of finance, as we have seen with efforts such as the GameStop short squeeze in 2021 (Davies 2021), where a Reddit community agreed to all utilise a stock trading system to put a hedge fund in a position of guaranteed loss through the increase in price from their combined demand. However, with DLTs it is more difficult for a grassroots community to come together in this way, other than to similarly affect the price of a ‘coin’ through combined demand efforts. This is because most DLT ventures are centrally controlled to some extent by an effective ‘elite’ and because the ways a DLT platform can be used is more limited than other platforms (due to the immutability and permanence of records). The lower-level ‘community’ surrounding a DLT project therefore acts more as a (sometimes unpaid) workforce that is labelled ‘community’ by the venture owners and which are only considered part of the community as long as they share the same profit-oriented goals. There is of course room for people supporting or following a DLT project to consider themselves a community and engage with each other through various channels in the same ‘warm’, ‘just us’ ways that we associate with classic definitions of community. However, as I have argued above, these actors do not have much say in how that project moves forward and for some projects, the actual product matters less than the ability to sell tokens and cash out before value starts to drop. This imbalance of power and economic/cultural/social capital also results in only some actors being able to claim and mobilise this risk if failure, or the ‘unforeseeable’ in their predictions and outcomes for both the space as a whole and their organisation. Komporozos-Athanasiou (2022: 131-132) calls this ‘strategic ignorance’, which allows some actors to deny liability while retaining their power as experts and divinators. This further means that in addition to societal organisation around values of market rationality, it is also resting on 'the generative power of its unique speculative imagination’ (Komporozos-Athanasiou

2022: 144-145). In this way, 'community' can thus be something that is mobilised to achieve certain outcomes, but this action is not accessible to all actors. The connection between the influence and capital of an actor and their role in speculation will be further discussed in the following chapter and the idea of 'speculative imagination' expanded upon.

2.6 – Conclusion

So far, I have presented the argument that DLTs tend to take similar shapes to organisations and trends in the wider technology and finance sectors, particularly that of 'the platform'. I have demonstrated how the ostensibly open nature of DLTs as infrastructure often ends up restricting meaningful choice and that there is a tendency for centralisation *of some form,* regardless of what the intention is. The way DLTs and markets operate further aligns with the financialisation of society and the role of authoritarian neoliberalism, which limits the scope of credible action states and institutions can take in the face of economic difficulty. Through these discussions I have begun to answer the overarching research question (RQ1) of what the democratic and economic imaginaries are for DLTs and cryptocurrencies. I have also touched upon RQ3 concerning what claims are made about the betterment of society and RQ4 about how we may better understand these developments as sociologists. In the following two chapters, I will provide a deeper review of the social, economic and political underpinnings to these developments and give richer accounts to help further address the research questions.

The next chapter will build on these arguments to demonstrate how the efforts towards decentralisation and removal of human interference are largely driven by financial and speculative interests, which also adds a further dimension to the notion of their value – that of future oriented speculative value. The reason DLTs have the tendency of to follow established patterns will then be explored further in Chapter 4, where I argue that particular economic assumptions and ideas about value influence the shape that DLTs and their associated markets take, and which explain the limited imagined scope of action.

Chapter 3 – Speculation and risk

In my discussion of the concept of 'platform economy' I established that the digital economy has become an integral part of the general economy. It encompasses certain economic activities in most sectors, due to the societal shift towards internet and software-based solutions for services, accounting, record-keeping and much more. Within the digital economy, platforms play an important role as intermediaries between users and other users, companies and companies, as well as users and companies. Small or large, start-up or corporation, they largely collect their income from 'rentier behaviour' (Davis 2018) or the collection and selling of personal data to advertising clients. As noted by Christophers (2021), collecting rent as a key source of income has persisted in capitalism despite diverse assumptions from neoclassical, Marxian and heterodox economic theories that it would disappear. However, he argues that the form of rentierism has changed to include ownership of intellectual property and that the rentiers are companies rather than individuals. This means that those with established presence always will have an advantage in these economic spaces, as they have passive income streams which a 'renter' does not. This allows them to more easily grow in size and can mobilise their growing capital to occupy new spaces.

Large platforms therefore also have another tendency in common, by design and intention, to monopolise certain spaces and sectors within economies in order to become indispensable intermediary infrastructure. Successful platforms tend to consolidate their position as indispensable through network effects among users and clients, as well as putting up barriers to prevent cross-platform compatibility and transfer of information (Srnicek 2020). This way, users already invested in their ecosystem will have little choice but to stay with a particular company. Many corporation-sized platforms, such as Amazon, Facebook and Google, use their influence and capital to capture as many markets as possible, and funnel users into their offered solutions.

DLT start-ups in finance often centre their business on new cryptocurrencies, exchanges, or services to assist traditional companies with adopting DLT solutions into their organisation. In the energy

sector, for example, the use of DLT ranges from renewable energy authenticity tokens, smart meter databases, investment into renewable energy projects, as well as crypto-markets for prosumers to sell their surplus energy. A prosumer is someone who has their own energy production (usually solar panels or wind turbines) that covers their own needs and creates a surplus. Prosumers find DLTs useful as it allows them to operate platforms on top of the existing energy grid. Rather than selling their surplus back to the grid operators or energy companies, a DLT can be used to track how much energy is put into the grid and therefore be sold by the unit directly to other users. Crypto-tokens are in these cases used to represent units of energy, but DLT energy companies usually also have a second token that works as a payment system[19]. This is a way of using DLTs to carve out a commodity market for small scale energy production, but even more so for the payment tokens that represent the suggested value of the platform as a service, or in some cases the fees charged by the platform for each transaction.

Value generation within the operation of platforms is not too dependent on production, and is instead mainly concerned with the continued *flowing* of money and information – it does not matter what is bought, or even if something is actually bought, as long as transactions are happening. However, it is also important to consider how the platforms themselves are being used for speculation, in ways that are even further disconnected from production and consumption. For investors, it matters less if a platform is *actually* providing its service successfully and growing its profits than that the general image and narrative of the company is portrayed and received as being successful (Srnicek 2020).

The value of a company, token or investment does therefore not reflect any substantial value of *something* (Davis 2018). The traditional view of value (which will be further elaborated in the following Chapter 4) as related to fundamental equilibriums would therefore predict that bubbles

[19] Similar to the large platforms mentioned in the previous chapter, this often means that DLT prosumer platforms have both payment and usage measurement 'in house' and pushes the exchange moment to fiat currency onto the users when they want to sell their payment tokens elsewhere.

will occur due to the stretching of value from its underlying corresponding 'thing': value is seen as something 'elastic' that always has the risk of, and eventually will, snap and bounce back (Konings 2018: 8-9). It is within this logic that discussions of speculative bubbles are grounded. Konings (2018: 4-13, 40-41) instead urges us to consider value in terms of *plasticity* – as having the capacity of being moulded and staying in a particular shape, without retracting to its previous form.

In the first instance, the image of success is achieved through mobilisation of capital to steer attention and other investors towards your desired outcome. Konings (2018) uses are a reinterpretation of the term *leverage* to describe this process, which in business studies normally is treated as a mere amplification of possible outcomes that corresponds to the amount invested but does not affect the future of the market. Using Uber as an example again, Konings' alternative understanding of leverage can be applied to explain that investments into Uber's continued operation (despite running at a deficit) do more than act as bets on Uber's future successful domination of their field, they *ensure* that Uber continues to be a contender for monopolising ride sharing by inflating the value of the company as compared to revenues and profits. In finance as well as in the world of platforms, leveraging *should* be seen something that increases the likelihood of success under the guise of being predictions on outcomes of a fair and equal market participation. This also means that large investments can be predictive in themselves, by their virtue of having happened. The platforms that get heavy investment are more likely to give their investors the returns they are looking for, regardless of how well the company performs, which in turn further strengthens the monopolising tendencies of a successful platform.

When new markets are presented as, and predicted to be, 'the next big thing', what matters most is that actors that can provide large market-shifting investments *buy into the narrative* (Davis 2018). It is important to point out that this perspective is different from suggesting that a company that has attracted large investments is more likely to succeed, as they can afford to roll out their service. What is suggested here is that the narrative of a new platform, market or innovation as a 'predicted'

success becomes a self-fulfilling prophecy if that narrative is accepted. The more successfully a narrative is sold to other actors, the more legitimised the narrative becomes and thereby the truer it becomes in its effects. When the outcome indeed does favour a particular market, platform or innovation, with the help of large-scale capital, this will be interpreted as a successful prediction and testament to the quality of the service as well as the skill of the investor. Investors shape the future of a market through the narrative of why their prediction is the likely outcome.

In many contemporary national economies, most of the circulated money is not connected to production or consumption. In the UK, for example, only 3% of money exists as fiat currency, or as capital in firms operating in the material economy. The remaining 97% is circulating in the financial sector (Davis 2018). For the creating of exchange value, to be traded financially, no commodity is needed. As expressed by Lazzarato (2013: 213-222) financial capitalism has moved beyond the shift from Marx's statement of Commodity-Money-Commodity to Money-Commodity-Money, and now includes direct exchanges from Money to other forms of Money. The circulation and continued trading itself generates the necessary rent for the owners of the exchange or platform, and simultaneously increases the exchange value of the assets traded. A DLT-based company that launches a new cryptocurrency therefore only needs enough promises of what they offer for trade to happen on their platform. The hope is to attract investment for investment's sake, to allow for accumulation for accumulation's sake (Marx 1887: 418).

Because financial markets and platforms are conceptualised within understandings of money and markets based on neo-classical economic assumptions, the process of steering markets as explained by Konings is not formally recognised, but instead framed as a matter of translating *general uncertainties* of economic life into *manageable risk*. The most important aspect of this is that the narratives employed in financial and platform markets are informed by what Beckert (2016) calls 'imagined futures'. When actors aim to weigh hopes, goals and uncertainties, their imagined futures are often counter-factual to current realities and do not extrapolate from previous knowledge. In

speculative risk calculation, the *present future* thus gets confused with the *future present*. As Beckert and Bronk (2018: 11) express it:

> '…rather than prices reflecting relevant decentralised knowledge (as Hayek assumed), prices reflect the contingent way we happen at any moment to imagine the future will be, as well as the contingent interpretations we place on incomplete evidence.'[20]

However, it is not only important to note that valuation is based on expectations rather than knowledge of something's value, it matters *who* is behind the expectation. Here, it is useful to consider Zelizer's (2012) ideas about the role of relational work, for which some actors have more influence than others. Relational work is the continuous negotiation that takes place between economic actors to establish the unwritten rules for what counts as currency, how it can be deployed and therefore what value it has in a specific context. This means that value and money is a performative process that is constantly changing. By combining the ideas about the role of expectation, we can consider that not all economic actors have the same sway over these performative decisions – some will be seen as more trustworthy; knowledgeable; or even successful enough to be more convincing.[21]

To use Bourdieu's (1986: 241-258) terms, an economic actor's *economic, cultural* and *social* capital determines in part the likelihood of them being able to affect the outcomes and direction of overlapping valuation processes. This also influences the concept of 'strategic ignorance' (Komporozos-Athanasiou 2022: 131-133) raised in the previous chapter, which allows certain influential actors to retain their position and reputation even when a prediction turns out to be wrong, i.e. when a different economic imaginary turned into reality. Expectations rest to a large extent on conventions and social structures, which not only limit what types of imagined futures that

[20] It is actually quite hard to believe that values are supposed to reflect some inherent quality of a product or a service, when boards of directors simultaneously label rogue business leaders as dangerous to the company's reputation and valuation. A recent example is Elon Musk's poorly veiled attempts at manipulating the stock price of Tesla, at the company's dismay (Shead 2021).

[21] Zelizer's ideas about economic behaviour will be explored further in Chapter 4.

can be thought of, but also limit which actors will be taken seriously. In many cases, some institutions are seen as reliable sources of predictions, such as central banks, credit institutes, and international organisations such as World Bank and IMF, but also those who are seen as successful businesses and people. Their influence and appeal are more important for the success of their narrative than their track record with previous predictions. These institutions, companies and individuals thus hold more sway over where the economy and markets will go, than the average person. This creates a situation where the spectrum of possible actions is dictated by a very narrow world view dominated by a combination of older investors with economic capital and young tech entrepreneurs who are using their social capital to steer attention. This again reflects a closed circuit of 'just us' (Nelms et al. 2018) that is merely using a language of inclusion without any inclusive action.

Pilmis (2018: 124-127, 132-141) further highlights how it has become more important for forecasters to have followed the common rituals than to be correct, as mistakes can be blamed on unforeseen occurrences. The narratives and imaginaries from revered predictors act to justify and legitimise action despite uncertainty. The type of constitutive investments that create or steer markets depend on this legitimisation. Simultaneously, it is important for the integrity of the narrative that these constitutive elements are denied. If it was admitted that markets are affected by the predictions themselves, the predictors would actually be responsible for the future that unfolds rather than insightful (Beckert and Bronk 2018: 18).

Within the DLT space, the technology itself is presented as a way to extend the calculability of risk, by removing irrationalities and uncertainties. This way, more money can be pulled into DLT markets, as they speak to the underlying understanding of how to manage risk in financial markets. The narratives and imaginaries present within the DLT space are thus much less alternatives to traditional finance than they are speaking to established preferences for alleged precision and calculability. The focus on calculability has been discussed by Hacking (1990: 4-6) as related to the

historical ideological shift from determinism to probability. Human behaviour increasingly seemed to conform to normality curves, but over time statistics and probability have gone from being descriptive to predictive in an almost deterministic way. By embedding probability into how we organise society, chance is now at the centre of decision making. The concept of 'risk society' as described by Beck (1992) similarly concludes that society appears to be moving towards more rational thinking and decision making, but in actuality uses 'the rational' to excuse an overestimation of what is possible to know. Choices with known drawbacks are seen as irresponsible and replaced with attempts to exploit an uncertainty that is believed to be predictable.

The similarity between these approaches to risk and speculation and those associated with DLTs allows us to call into question how much of an innovative and disruptive force that blockchain and cryptocurrencies really offer: in most aspects they are continuing along the same particular logic. Interestingly, this also suggests that DLTs as tools to manage risk simultaneously are the very type of punt that they are meant to reduce the uncertainty of. This is of course not unique to new technology, but is generally how new financial instruments are introduced. If the sphere of influence for ignoring fundamental uncertainty was its own isolated bubble, it could have been argued that 'experiments' like DLTs are not a danger to society. But, as made evident after the sub-prime mortgage crisis (Demyanyk and van Hemert 2009), the constant expansion needed to stabilise the previous uncertainty requires a steady flow of new money, which in the case of the financial crisis of 2007-08 ended up being public money.

How then, can we reconcile the imaginary-driven nature of markets and platforms as having *plastic* rather than *elastic* value, with events such as individual depreciations or system-wide financial crashes? An imaginary is a hope and a promise that is oriented towards not just the future in general, but a particular future that is not related to held knowledge about the present. As the future imposes itself on the present, the difference between the *speculative value* and the *actual value* becomes apparent and the former collapses into the latter (Davis 2018). In other words,

multiple imaginary futures may be mobilised by different actors simultaneously. These promises for the future then drive the current valuations of companies and assets involved in the prediction, resulting in a speculative value. How well this speculative value will match the actual, or rather *revalued* (Konings 2014: 83), value in the future does not matter for the current trading of assets and shares of companies *as if* the imagined future will come to pass and at the prices that match this speculation. When the future arrives, however, those still holding assets that turn out to not match will be the losers. This dynamic is exploited by those who have the capacity to steer markets and attention towards trading positions that will benefit them, and they will typically have disappeared from the space with their profits before the future arrives.

Appadurai (2015: 46-50) similarly notes that the role of what he calls the 'imaginary of uncertainty' in finance is much less about the victory of rational calculation, where passion has been tamed by logical interests, but the opposite: 'the animation of the interests by the passions' (p. 46). This means that risk is an organising factor, rather than something that should be overcome or managed (Beck 1992). Risk is there to be exploited. But this imaginary is a subset of wider society-encompassing 'financial imaginaries' – social and cultural constructions that envelop our general definitions of other constructions like 'money' and 'credit' (Martin 2011: 65).

Although a market or the value of a platform can be upheld on a promise of an imagined future for an extended period of time, not all promises can become reality at the end of the line. The role of the speculation is to draw more money into the system, which benefits those who cash in on transaction fees or the selling of the platform itself as infrastructure. What happens to the value once the investments and purchases have been made does not matter to those who sold the narrative. This in turn creates yet another instance of restless capital (which tends to be short-term and high risk, as opposed to the 'patient capital' (Mazzucato 2016) in long-term investments) and will need a new 'new thing' that can be promised, pumped full of venture capital, draw in public attention, then 'institutional money' and finally be left to its fate.

This draws attention to how promises play such an organising role in economic activity. On the most fundamental level, money itself is a promise of compensation to the bearer of a note and debt is a promise to repay what has been borrowed. As argued by Lazzarato (2012: 7-11), debt has become an increasingly central function in our contemporary societies and is an organising factor of how we relate to each other and to the collective. According to Lazzarato, we are all examples of the 'indebted man', which is bound up with the destiny of capital and forced to become entrepreneurs of the self to keep up our promises. This relation to the collective, or rather to capital, is common across classes and professions and capital itself acts as the creditor. In many ways, this is an economic manifestation of the social contract (Rosseau 1762) but making our possibility to change how we relate to each other more rigid.

Furthermore, promises are at the centre of the narratives that business ventures are assessed and valued against, more pronounced than anywhere else in the platform companies discussed above. These promises, often without results for years (or ever), thus lead to far higher valuations in the present than the company's combined assets and market cap.

For a cryptocurrency like Bitcoin, similar promises are made in the hope of attracting investment that can bolster both the use case and its accompanying network effects, as well as the value of the token itself – the popularity is reflected in the price, just like buzz around a new app causes its shares to skyrocket. More importantly, the promises attached to cryptocurrencies beyond relating to their increased market share are meant to be the attractors of attention and thus need to speak more broadly: by promising that DLTs will be an alternative to the perceived ills of traditional money and finance the DLT space itself gets more attention. Promises, with good or bad intentions and regardless of their future actual outcome, are at the core of DLTs. These promises are authored by people to other people and are not dependent on any new technological innovation.

Speculation is likewise a promise, but one dependent on growth and therefore constitutes creative destruction (Mullan 2017) of whatever can be commercialised or even whatever can be thought of

as possible to commodify. With the advent of DLTs, this has become easier than ever before, as any asset (physical, digital or imagined) can be registered and tracked on a distributed database. As emphasised in the introduction, it is not the technological innovation itself that allows this development, but that the promise of security and stability is embedded in the narrative. DLTs thus act as both facilitators of further commodification *and* as commodified platforms/markets themselves.

With prevailing narratives masking this tendency of platforms to be built on speculative value[22], alternative visions of the future are drowned out by the tendency for capital to seek out imagined futures that match their expectations of how markets work. To further elaborate on this concept, Davis (2018), argues that the idea of speculative value is instrumental in understanding current financial organisation, as previous critical theories of value are not able to fully capture the economic reality of accumulation for accumulation's sake. In a historical chronicling of previous critique, he starts with Marx's (1887) understanding of value as a result of production, and profits as consisting of labour-generated surplus value that is realised for the capitalist in exchange. When consumers started being placed at the centre of value creation, theorists such as Baudrillard (1981) argued that symbolic value better captures where valuation takes place. To him, value is assigned, rather than reflective of production, and is the result of imaginations of people, their relationships with each other and with goods being used to express individuality and social status. Davis (2018) also notes that financial markets increasingly do not have to rely on neither use value nor symbols for the creation of new value. This is evident through observing that financial instruments often are bundles of other derivatives which the trader does not necessarily even own, and that more and more value is created from circulating existing capital, rather than the introduction of new products or consumption. Demand, and even expected future demand has become secondary to completely

[22] Davis (2018) notes that although Apple, Google, Microsoft and Amazon were the four highest valued companies in 2016, in terms of market capitalisation, their value as accounted for by sales, profits and assets placed Apple in 8th place, Microsoft 23rd, Google 27th, and Amazon 237th.

speculative predictions of potential future value that in turn generates increased value for the traders today. The social agreement about value thus has an important temporal aspect that stretches far into the future. This means that value is not only a temporary agreement, and as raised by Bjerg (2014) dependent on the different expectations of the transacting actors, but that the temporary value assigned today depends on our expectations of tomorrow.

A successful economic narrative thus has to be associated with institutions or persons that are generally thought of as authorities in the field (Beckert 2016). It gives those who are worried about uncertainty a way out, or at least what is perceived as a more qualified guess than what they could have done themselves. Narratives that tell the audience why a particular actor or institution should be trusted with these predictions over others thus become quite important – being the reference point for calculation matters much more than what the calculations actually are.

Beckert and Bronk (2018) argue that economic modelling itself is part of the knowledge production that supports the economy, and as LiPuma expands: 'The production of knowledge about the economy has become inseparable from the science of how it works' (LiPuma 2017: 3). In other words, it is partly because of the trust in the models, calculations and predictions themselves as true that they turn out to have sway, and actions taken by those at the core of this knowledge production decide the course of economic developments (MacKenzie 2006). In many ways, central banks do not fool themselves that they don't have this power, and many European central banks have started to shift their focus away from econometrics, and more towards the conversations that happen in economically influential spaces (Reichmann 2018: 105-123). This means that these central banks to a large extent base their national policies and strategies on what they believe that economically influential private persons and corporate representatives are saying and doing. These individuals and companies are influential far beyond the reach of their investments, in that they form part of the core of the self-fulfilling prophecies that their investments become.

Furthermore, this also means that even critical theories about the inherent problem of speculation as being *detached* or *disembedded* from a 'real economy' are not challenging economic knowledge production, but reinforce substantivist views of value as stable and predictable – it excuses developments as either inevitable or as logical effects of general economic laws. The core of dominant economic understanding does not lie in capitalist organisation of a real economy, but in its monopoly on defining value and economic occurrences as calculable natural laws.

In addition, a narrative that is anchored in a belief in predictability further pushes responsibility onto the individual. A person who has failed in their economic ventures may blame themselves for bad prediction, rather than question the premise of economic calculability. The narrative promises that there is a safe place beyond the risk – that uncertainty can be overcome – but that the first step is to embrace the risk itself before the outcomes can be reached. Konings (2018: 1-31) sees the root to this logic in the individualisation of how to fulfil this promise. If the state is no longer expected, or even preferred, to be the provider of certainty in the face of risk, the individual is the one that has to make the *right* choices to avoid being on the wrong side of the prediction. For the individual, what is actually systemic inequality of opportunity and influence appears as a matter of proper planning and making well-researched financial choices. This also has global effects, as western actors are more likely to be authors of dominant ideas, which in turn robs other parts of the world of the opportunity to take part in the narrative building even for their own economies. In other words, the imaginaries that exist among those with economic and social influence in the financial sectors act as stencils for the ideas that become dominant organising ideas.

In particular, it is the financial sector's attitude towards speculation and risk, ostensibly informed by rationality but in actuality very much uncertain, that inflicts risk upon the public through this chain of action. These imaginaries include an alleged rationality that helps legitimise the courses of action needed to pull in further capital and eventually the aforementioned 'institutional money' (Mazzucato 2016: 98-118). The international reach also goes beyond a copying of business

structures, but also lets multinational companies use the similar market structures to enter other countries. This allows them to further push the risk away from the risk-taker, holding not only the public in the own country as security for bets, but also outsourced to other (often poorer and less regulated) economies.

LiPuma (2017: 2-5) argues that crises let the public see behind the veil of what appeared to be a trustworthy and predictable economic system. A crisis reveals the sociality of markets that dominant economic thought is denying or trying to hide. In order to uphold the narrative, the events of a crisis are therefore in hindsight retold as having been the result of external shocks[23]. Statements are issued that the problems have passed, that the irrationality is being removed and that the crisis actually was not even *that* bad. When the legitimacy of such narratives shows signs of waning, supporters become more fundamentalist: 'In its place flowers a religious-like fervour, disguised as scholastic commitment, to defend the assumptions against theoretical critique and deflect the insults instigated by damaging evidence' (LiPuma 2017: 3). LiPuma thus argues that although power structures and economic organisation may have set the stage for the emergence of financial capitalism, how the situation actually develops comes down to the type of knowledge that is being produced about why it should continue along its predicted path.

But, as the structure itself and the economic realities affect what opportunities for change an actor has (as well as the values that they are likely to espouse) this often results in a performative reproduction of what is already present. The reason the prevailing neoclassical economic narratives have not been replaced is that the management of crisis by the state is part of the narrative. The reason that authoritarian neoliberalism results in bailout and austerity is because it is presented and perceived as the *correct* way to manage crises and national debt. Those that have made daring speculative investments therefore always have the state's bailout as something to count on – a

[23] From the perspective proposed in this thesis, these 'shocks' are never *external* but part of the same economic system and have the same interconnected causes as the imagined self-contained market. The *crisis* is not an exception but business-as-usual.

hedging of the bet. The state is in forced agreement with the assessment that they need to sustain the markets, and thus through the chain of influence come to share the same dominant ideology, based upon the financial imaginaries that are produced by those with the same economic and social capital to share habitus and thus dictate what is determined as success within the field (Bourdieu 1986: 241-258).

The chosen approach of austerity represents the state accepting the shift of responsibility from the speculator to the public. In other words, bailouts and the following response of austerity validates the narrative and behaviour of speculative finance. It is a response that agrees that the speculation was not constitutive, and that failure thus had to stem from unforeseen events, unrelated to the fundamental tenets of finance. Speculation and austerity are two sides of a coin that together are mobilised to exploit the uncertainty of the future. As expressed by Konings: 'The moment of bailout is characterized by an absence of meaningful choice: intense uncertainty about what the future has in store comes to coincide with a compelling certainty as to what needs to be done. The future simply imposes itself, albeit in the shape of the past' (Konings 2018: 30).

In all aspects of how platforms and financial markets operate, the constitutive mobilisation of speculation, imagined futures and leverage thus demonstrate that despite an official adherence to belief in the neutrality and predictability of markets, they are regularly manipulated and steered, something that is shrouded by shared narratives.

3.1 – How speculation is perceived in society

Open market-manipulating actions should in theory present a challenge to many of the fundamental assumptions that underpin the ideology of markets. However, as discussed above, criticism is typically brushed to the side with explanations of the crises being exceptions to the general rule of market equilibrium. Every time the financial markets cause dips that *must* be absorbed by the state, these setbacks can be reframed as 'unprecedented times' or as 'states of emergency' – an exception to the general operation of markets and capitalist economies. As noted by Bjerg (2014: 2) even the

term ‘crisis’ suggests a temporary deviance which has to be overcome in order for things to *go back to normal*.

Furthermore, Mirowski (in Lash and Dragos 2016) identifies a shift in economics from being based on physics metaphors (balance of flows of energy or money) to computational ones (mainly of the market and whole economy as information processors). This is an important shift, as this current model is far more oriented towards the calculability that is associated with the project of searching for certainty in which DLTs are the latest instalment. The economic imaginary is arguably affected by the choice of metaphor. The previous likeness of economics to ‘flows of energy’ gives much more room for viewing the workings of money as enigmatic and inevitable. Although the classical economic models that are associated with this also suggest that the economy is balancing itself based on value-rational behaviour, it still allows for an almost *magical* explanation for how the equilibrium is reached. This era did not require a heavy assault on the lack of trustworthiness that humans inherently possess, and which needs to be removed, because the market supposedly self-corrects. According to Mirowski, it is only with the shift towards *computational* models of explanation, or *computational imaginaries*, that an anti-human focus on how to ensure that markets run rationally becomes a central feature.

The contemporary economic imaginaries are therefore ideologically in agreement with the neo-classical economics of Hayek (1976) and Menger (1892), but partly because of this shift in gaze from letting the markets adjust their own flows to models that are designed to steer this development based on computation, the relationship with the financial world changes. It is only with this as background that DLTs make sense. However, as discussed earlier in this chapter, the narrative of financial speculation includes tropes of calculability and predictability as tools to delimit irrational economic behaviour, but which actually are there to attract capital. The eventual collapse of speculated, imagined futures into actualised ones does not take away from this narrative, as the created markets and platforms are rescued by blaming unforeseen external events. In other words,

this *imaginary* and its associated dominant ideals are so ingrained that they will remain intact regardless of the outcomes, as long as they are profitable to elites who are rich in economic and social capital.

Fundamentally, then, all risk in economic life is actually uncertainty, and regardless of the improbability of an event, it is the winning imaginary, or set fictional expectations, that funnels capital and action. The dominant ideas include trusting that predictions are reliable and so despite the lack of accuracy from economic models, economic activity based on them succeed in being part of the production of knowledge that is steering individual choices, policy, funding and investment. DLTs embody a mobilisation of the idea that an increase in reliability of data, and reduction of what is perceived as irrationality in turn increases predictability of economic life. What it is actually doing is feeding funding and action into the streams that reproduce the economy and markets in the image of what we already have. To summarise this argument: by acting as if risk can be managed, uncertainty is reproduced and extended from the present imagined future that eventually becomes someone else's problem to deal with in their future present. As expressed by Esposito (2018: 228) 'Like all fictions, financial models about the future are extremely controlled constructions – much more so, indeed than reality – but they are not accurate representations of a future reality'.

Narratives that support the expansion of DLT platforms therefore both appease general ideas about how economies and money functions, by promising calculability and rationality, but also mobilise unrealistic expectations about potential outcomes to calm down any anxieties about the uncertainty involved. The language of DLTs being needed as replacement for traditional institutions is less predictive than it is bringing about its own narrated imaginary. The dominant narrative has successfully capitalised on critique of states and central banks as incompetent. Apart from neoclassical economic critique (Blinder 1988), this development may also have been helped by how the increased transparency of how central banks use forecasting as a steering mechanism could have made people trust their predictive abilities to a lesser degree, in turn reducing their ability to

use these predictions for steering in the next instance. This highlights the importance of masking the function of a narrative that acts as a self-fulfilling prophecy.

The success of widespread trust in a narrative may rest on perceived sincerity of what is being said, regardless of how well it works. Reduced public trust in Keynesian economics (Palley 2004) or other forms of institutions deliberately and openly trying to steer economies toward what is presented as being for the public good is also compounded by the continued undermining efforts from neoclassical economic thought on the role of the state and central banks (Beckert and Bronk 2018: 26-28). The neoliberal ideals of a slim and efficient government are mobilising people against a characterisation of a perceived political elite, in favour of a different set of society's elites.

However, it is important to note that although we are seeing success for narratives that promote austerity, these ideas persist regardless of empirical evidence of the opposite. In times of crisis, such as the 2007-08 financial crisis, or more recently with Covid-19, there is evidently a 'magic money tree' (Kuenssberg 2018) that can be utilised for public spending, including bailouts and furlough schemes, but still the ideals and mantras of reduced spending remain the same, as these events are framed as exceptional circumstances that the assumed normal equilibrium cannot absorb. It is also important to question to what extent the public good is a motivator for the style of governance that primarily acts to sustain the market economy. Even during Covid-19, the UK's Conservative government prefaced their business rescue packs by highlighting how it would be disastrous for the economy if too many people lost their jobs. Aligned with the conclusions drawn by Aeron Davis (2018b), the response to the pandemic by UK Government has revealed multiple instances where these schemes have been used by representatives of the UK Government to give contracts to close associates and friends, in some cases without even receiving any products or services in return.

The dominant economic narratives that inform the structure of platforms, as well as finance in general, thus reinterpret uncertainty to be 'manageable risk', and mobilise leverage, imaginaries and speculative value to direct investment. For the speculator, it is more important that money is

continuously invested and transacted than to see the imagined futures through to when they become actuality. In other words, the speculative promise is mobilised to draw more investment in, and if that money can be extracted and the promise left to someone else, the speculator no longer cares if what they set in motion turns disastrous. When the present turns out to be less rosy than the speculative value of the past, we see effects across society that most often lead to public institutions paying the price, as in the case with austerity effects following the bailouts and all the while (due to the use of 'strategic ignorance' (Komporozos-Athanasiou 2022: 131-133) the speculator may even still retain their authority and standing as an expert). To an extent, the narratives protect themselves, by appealing to predictability, calculability and natural laws of markets, but why do the speculating-oriented economic order escape unscathed time and time again, despite predictions that neoliberalism finally will come to an end? (Crouch 2005).

As highlighted by Stäheli (2013: 6), critics often miss that the dominant logic of markets has been largely accepted by the general public, and its bad image in the past and association with deceit, gambling and immorality has been replaced. As part of its legitimisation project, speculative markets have made attempts to be more *inclusive* and to bring the general public into financial markets. The idea is that lack of formal access to markets is the main obstacle to partake in speculation, and that this largely can be blamed on the monopoly of traditional institutions. Speculation is framed as being open, but that you have to possess particular skills, or understand particular patterns to take advantage of the opportunities when they are presented to you (Davis et al, 2020).

The 'speculator' becomes a respected but elusive figure, that people can aspire to become. It appears to be inclusive through the promise that 'anyone can' but is kept exclusive by the additional 'but not everyone will'. In speculative finance, as in DLT and platform investment, the image of democratisation suggests that nothing is required to take part, but very quickly it becomes evident that starting capital, particular software, some general investment knowledge and business acumen is essential. This is often accompanied by a language that makes the technology and practices seem

complex and difficult to explain. Particular word choices establish a barrier that an individual must show correct behaviour to pass through. A person who 'gets' speculation or DLTs, is glorified as someone who has seized the opportunity and educated themselves. Arguably, the technology, markets and the narrative themselves have been built and disseminated by a particular cohort of people, and is designed for people like themselves. This way, the in-crowd, or 'just us' (Nelms et al. 2018) can keep the real general public out, while simultaneously getting approval from the wider society for being good speculators (Stäheli 2013). It is useful once again to consider Bourdieu's (1986: 241-258) ideas about different 'capitals' to understand how influential actors continue to hold their positions. They do this by possessing enough economic capital to overcome the financial barriers to entry, the social capital of having a network of influential people, as well as the cultural capital to know how to speak about the economic and technical aspects.

As discussed in the previous chapter, ideas about the possibility to become successful by associating with a venture is part of the way people are recruited to the 'communities' that support this type of organisation. This false hope to be an actor on par with established 'winners' (in a speculative sense) affects a platform's relationship with its members and users. The inclusive language and appeal to participation effectively acts to provide companies with free labour (Hicks 2020). Platforms, including DLT start-ups, utilise their community members to increase the use of their tokens and services, but also provide work to maintain and improve the platform. Members are doing this under the impression that they are standing to benefit as much as the provider of the platform.

By using particular language choices (such as invoking 'community') and establishing relationships between different users and between users and company, the members are being managed through a kind of conditional admission that hides its exclusivity and appears friendly and welcoming to the type of people they want to attract. By establishing a friendly image of inclusivity, some of the responsibility of managing the user culture is passed onto the users themselves. This allows platforms to become even slimmer, saving costs on moderating, but also to generate income

through the monetisation of user interactions. Although the relationships between users often appear to be spontaneous and community-like, the way in which users *can* and *are encouraged to* interact is carefully chosen and funnelled by the platform.

However, in contrast to these accounts of how economic imaginaries have narrowed and now mainly consists of one hegemonic narrative, Komporosos-Athanasiou (2022: 124-132, 137-140) argues that a form of community resistance is possible 'from within'. Even actors who are caught up in neoliberal capitalism but not in agreement with its narratives and outcomes can embrace the constitutive uncertainty rather than try to combat it and instead make alternative speculative bets on the future. Actors can also place economic outcomes from successful financial speculation towards projects that aim for societal change. Groups that are being exploited by the dominating speculative imaginaries can in other words 'counter-speculate' in ways that are more challenging than conventional critique, in particular when it concerns populism and far-right ideologies. As mentioned in the previous chapter, Komporozos-Athanasiou (2022: 133, 145-146) argues that these critical voices often inadvertently service the establishment and its ideal rational economic man when painting populism as irrational and emotion-based. Counter-speculating groups he refers to may instead challenge populists by consciously trying to cultivate conditions of confusion and volatility.

If we attach this perspective to the developments discussed earlier in the thesis, there is also potential opportunity for resistance to the growing concentration of wealth and power among those who control and influence the flow of capital by offering and pushing for alternative hopes and definitions of the future. Komporozos-Athanasiou (2022: 59-60) calls these bets on the future that embrace uncertainty 'speculative imaginations' – a separate form of relating to the unknown. Risk is managed, but uncertainty is unknowable. As touched upon in Chapter 2.5.2, Komporozos-Athanasiou (2022: 5-8, 40-41, 63-73, 116-117) thus argues is that the contemporary successor to Homo Economicus (the rational archetype thought to be the key player activating and embodying

the never-defined 'rational' market forces), is *Homo Speculans*. This character is not the same as the 'speculator' discussed above – the capitals-rich investor/entrepreneur who uses their influence over markets for their own economic and political gain while simultaneously suggesting to ordinary people (and anyone else outside of 'the know') that their success is the result of merit and having identified and seized an opportunity that was open to all. Homo Speculans is instead someone who either through choice or being forced by reality has accepted the uncertainty of life in contemporary capitalism and not only bets, but puts their whole weight behind an imagined future that would improve their situation. This actor is not seeking to exploit a system, but to play the only available game as best they can. This lends some additional light to the polarisation and individualisation of politics and world views discussed in Chapter 2, as actors are not merely hoping for some gain, but have put themselves and their future on the line in the hope that the world will change a particular way (including those who wholeheartedly subjugate themselves to an extreme political ideology). The type of people who 'get into crypto' can therefore simultaneously be 'speculators' in the economic and opportunistic sense, but also examples of 'Homo Speculans' who have placed a *bet* on crypto as the future.

However, it is important to acknowledge that different parts of society have different opportunities and in the same way that access to resources and influence varies, so does the actual ability to gain traction for a particular speculative imaginary. Regardless, those who can offer alternative imaginaries theoretically stand a better chance to enact change than those who try to mitigate the risk condition of our contemporary economic and political life. If society is now organised around risk (Beck 1992; Giddens 1990) why leave the divination to those who are already benefitting from the current conditions?

Despite the possibility of resistance from a general population point of view, particular products, platforms, organisations, or projects can provide more of a challenge. A platform delimits what can be done through the technical limitations of their software, as discussed in Chapter 3, but also utilise

cultural limitations of what is expected of *their* community. One example of use manipulation is Uber's use of price spikes during times of high demand. This does not benefit the drivers as much as it increases the profits for Uber, as it reduces the number of riders willing to pay the increased price (Shestakofsky and Kelkar 2020). The people employed to deal with the public are most likely what Shestakofsky and Kelkar call 'relationship workers' – people who interact with current and potential users with the aim to cultivate a particular image for their platform in ways that do not appear to be the usual salesman pitch. This allows for informal, performative aspects of managing users and stakeholders beyond formal rules and coded functions.

In addition to rhetorical and narrative-driven securing of particular economic outcomes, Pistor (2019) demonstrates that on the corporate level, financial outcomes are also being coded in law. She suggests that corporations and trusts can operate on creating their own legal structures, partly by choosing what to be defined as, and partly due to certain legal functions having been subcontracted to private parties. Multinational corporations can then refer to their carved out preferred legislation in the most lenient countries, to ensure that their rights are extended to everywhere they operate. One effect that Pistor (2019) identifies, is that countries have extended private property rights to also apply to future expected profits. This means that states can be sued internationally by companies if they try to limit their markets or change legislation in ways that affect their future business. In effect, they can wield the coercive power of states against the states themselves and pit states against each other. There are already similarities in some DLT groups' aims for opt-in governance, such as BitNation, (Tarkowski-Tempelhof et al. 2017) and the actual practice of corporations opting in for certain legal structures. Like companies can use their legal personhood as shields against accountability and responsibility of shareholders, DLTs also shield the individuals involved.

Pistor (2019) further argues that corporate capital does not actually flow, it is placed and retained according to specifically designed legal processes that operate with state backing, often with the

state itself held hostage. Poor states are especially limited in their capacity to push back, due to multi-national corporations threatening with international tribunals and 'global north' legislation and standards. When companies design their own control mechanisms, actual accountability is undermined. It may appear to DLT supporters that membership-based voting on the direction of a DLT is democratic and increases accountability through transparency, but if other people rely on the outcomes of a platform (or effects of the speculation on its success) without being able to affect it, then it will resemble how the legal structures have been hijacked by corporations already. These abilities to demand compensation or force states to guarantee their expected profits does not extend to public goods, such as investment in healthcare, education, social security or whatever else may also have been 'promised' to the future.

3.2 – Conclusion

This chapter has highlighted how DLT projects are limited in their scope of potential change and democratisation because they are designed and operated in ways that are very similar to patterns already present in speculative finance and in the now ubiquitous 'platform economy' discussed in the previous chapter. By inserting itself as infrastructure to extract fees, selling their entire platform (or indeed the DLT space) wholesale as a financial investment with potential future profitability, DLTs provide a next step in an already deregulating and volatile financial market. However, as I have also raised the importance of remembering that value should be seen as 'plastic' rather than 'elastic', the danger of a growing and entangling of DLTs with the financial sector is mainly because of how economic expectations and corresponding government behaviour often sees the public bearing the brunt of the consequences of large-scale financial crises.

These points help us address parts of the aims of this research. In particular, this chapter has served to highlight the economic focus of the democratic imaginaries that surround DLTs and cryptocurrencies. In addition, I have in this and the preceding chapter addressed what areas of society that are already most similar to this new field, which narrows down the involvement and conceptual alignment that we can come to expect from the majority of DLT ventures, but we can

also in this chapter start to situate DLTs structurally and critically engage with claims of neutrality that the technologies are hoping to achieve with their operation. This means that this chapter has addressed all aspects of the research questions, but only in part. The important contribution of this and the preceding chapter to our sociological understanding of DLTs is to highlight similarities with already problematic parts of contemporary economic organisation, but which also raises further questions about how these developments relate to underlying general assumptions about economic activity.

Throughout the chapter, I have argued that the financial world, governments, the general public as well as the supposed challengers in the DLT space are all adhering to the same fundamental economic principles and ideas about money and economic activity. The following chapter will now demonstrate what these assumptions entail, what effects they have on the possibility of change, and also how economic sociology can help us see money, value and economic activity in a different light. I will in the following chapter explain why DLTs and cryptocurrencies do not really pose a threat to the concept of money and why any currency/token can work as money as long as it is treated as such by a group of people that agree to the extent of its use and the rules of exchange. This illuminates the social underpinnings of money in any form, including cryptocurrency and other DLT tokens, but which therefore calls into question claims of DLTs removing ‘irrationality’ and ‘biases’ from the equation.

Chapter 4 – How does value work?

As demonstrated by the two preceding chapters, developers and promoters of blockchain technology in general and cryptocurrencies in particular pursue a narrative that is closely aligned with those of financial markets and the platform economy which tends to put capital at risk with the underlying assumption that society will step in, in the event of a crisis. To understand why this narrative is so pervasive, this chapter will detail the assumptions about economic behaviour and the nature of money and value that underpin these general understandings of markets that are common to the financial world, the platform economy and the DLT space alike. By focusing on the logic that underpins the narratives, this chapter will add more depth and nuance to the foundational explanations and perspectives on value that are needed to assess the capacity of democratisation through the use of DLTs, and thus address the research questions in a similar way to the previous two chapters. The three chapters together form the fundamental theoretical perspective which informs the remainder of the thesis as well as the approach to assessing the relevant aspects of the research questions.

The role of this part of the literature review is to highlight potential limitations to proponents' and users' imaginations when it comes to identifying societal issues and proposing solutions to them. In particular, it will critique the notion of *inevitability* that is attached to general understandings of economic matters, but most notably in neoclassical economics. As raised in the introduction, certain societal problems are seen as inherent either to human organisation or to markets, and solutions involving DLTs are therefore proposed at the level of accepting certain types of inequalities or societal flaws as unavoidable. This thesis does not accept these assumptions and this chapter will explain why we must broaden our understanding of *what the problem is,* beyond what can be addressed with technical solutions from *within the same system*. To make this very clear, the first section of this chapter will therefore begin at the most fundamental level and establish what theoretical assumptions are made about value and money and how these align with particular economic perspectives. This will be contrasted with a *social perspective* on money and economies,

followed by a section on how these assumptions are related to viewing DLTs as infrastructure. This will lead onto more general economic tendencies in society also aligned with the very same assumptions.

4.1 – Theories of money and value

Beginning with Satoshi Nakamoto's white paper (Nakamoto, 2008) DLTs have from the start been associated with the assumption that important issues with the economic world, such as financial crises, inflation and volatile markets, could and *should* be overcome through the use of this new financial technology. The particular view of what problem needed to be solved reflects the theoretical assumptions and ideological prescriptions of the Austrian School and neoclassical economic perspectives (Menger 1892; Hayek 1976). The central arguments of these economic perspectives rest on the assumption that value in any market or for any currency is the result of individuals making the best use of the information they have access to as they navigate the economic world according to the laws of supply and demand. Value, from this perspective, is an *effect* of the availability of a commodity (or entire market) but influenced by what the actors know about that availability, which is how differences between value and price arise.

This neoclassical perspective is grounded in the idea that money once spontaneously emerged in the marketplace based on the needs of exchange – in particular as a way of overcoming the problem of double coincidence. Double coincidence is the imagined reality of a society without money, where you as an economic actor have to find sellers of goods and services that you want that in turn also want to buy what you have to offer. As outlined by Dodd (2014: 17-23), the main problem with this understanding is that it is not supported by historical examples, as well as that it implies that there was a point in time where all actors simultaneously agreed that one particular commodity should count as money. Regardless of its historical flaws, much of economic theory still insists that money should be scarce, not useful as a consumer good and secure from fraud and forgery.

On the other side of the spectrum, Keynesian economists have assumed that what gives money its value is that it is guaranteed by the state (Dodd 2014: 23-26). Scarcity is not given much importance, as money is assumed to always have been issued through a central authority in the form of whatever that authority wanted as tribute or tax. From a Keynesian perspective, the amount of currency in circulation is therefore a choice, rather than spontaneous. It is not unexpected that differences in economic policy stem from these different understandings, but over the past few decades Keynesian approaches have largely been deemed irresponsible by neoclassical economists, as well as the political centre and right (Palley 2004). The idea is that high rates of inflation and economic instability are results of manipulation of what *should* be left to the automatic equilibrium that free markets allegedly create.

The proponents of cryptocurrencies thus defined the 2007-08 financial crisis in accordance with neoclassical economic perspectives, to be a result of manipulation of markets, both by states (including the time leading up to the crisis and the following bail-outs) as well as the 'money creating' practices of banks lending money without reserves to match. They envisioned Bitcoin to be the remedy - a token that is inherently and permanently scarce, that does not have any use-value and which is tamperproof and transparent, with its value being determined through supply and demand. Any issues stemming from manipulating supply, information asymmetry between actors or otherwise were seen as practically overcome.

However, both Keynesian and neoclassical economic perspectives converge in a view of 'the economy' as separate from the rest of society, as an entity with its own rules and cyclical patterns. Even within sociology, there has been a preoccupation with criticising the perceived quantifying and alienating effects of the economy, which is seen as increasingly individualistic, decreasingly social and taking over more and more spheres of society. Some authors (Konings 2018; Dodd 1994; Zelizer 1997) have noted that this view, most famously iterated in the concept of embeddedness by Polanyi

(1957) and Granovetter (1985), fails to acknowledge that money, markets and whole economies alike are also human social products.

This thesis builds upon these sociological challenges to common economic understandings in its assessment of DLTs. These ideas concern the fundamental features that are common across all monies and economic systems, including cryptocurrencies and DLTs. This has relevance not only to the narrative of DLTs technical features as sources of their value, but also to the believed inevitability of current economic orders and dominant ideologies. When the narrative of what is necessary to keep the system afloat is left unchallenged, and when sociological focus remains on its negative effects as if they are cyclical and essential, we miss the opportunity to critique the particular social structures that produce the narratives that drive these particular economic developments. A contribution of this thesis is to correct that through my analysis of DLTs.

In addressing this topic, Dodd (1994: 81, 152-166) argues that the common problem with most economic theory is the conflation of two distinct modes of inquiry, one which deals with general fundamental features and one with specific features of money and economic activity. The former is largely a theoretical question, while the latter can be empirical. What Dodd means is that in economic as well as sociological theory there is a tendency to view observed features of contemporary monetary/economic/societal systems as fundamental to any such system. This is what leads many economic theories – classical, neoclassical, Keynesian, traditional Marxist and other theorists alike – to put rational, self-interested behaviour at the centre, as a starting point for analysing the workings of money. They may disagree on whether this is a desired or harmful order, but it is assumed to be *essential* nonetheless. This is the perspective that enables viewing cryptocurrencies as 'perfect money', which due to its supporting technological infrastructure has inherent qualities that make it work as money.

What should be placed in the centre is instead the people that use a monetary form, for it is their *beliefs* and *practices* that uphold it as money. What matters most is the trust among users of a

currency that they will be able to re-exchange it for other things and that this is a stable fact over time and within the boundaries of that currency.

Each specific system may have its own knowledge and logic, but ideas about a specific monetary system does not constitute the actual value formation of the currency as money (Dodd 1994: 136-142). This is in stark contrast to neoclassical understandings, as they would contest that the only element that users add to the value formation is information asymmetry that may give certain players advantage in knowing an 'actual' price and use this to gain surplus value in exchange. The problem with neoclassical and other aforementioned interpretations of human action is that individuals rarely follow the ideal-type known as 'homo economicus'/'economic man', the person that acts mainly on value-rational self-interest. In actuality, people always act based on a range of different motivations, of which only some are self-interested. Other values are always blended in, such as consideration of others, moral views and emotional responses, but these influences on behaviour are rarely recognised by the actors themselves in the moments of making their ostensibly 'free' choices.

To a supporter of the Austrian school or neoclassical understanding, a human acting on anything but rational self-interest is a flaw of the individual and not the model, as they assume that the real value is the balance between actors. Any actor can therefore improve their situation by increasing their knowledge, but the total balance remains intact. Instead, we should emphasise that the call for balance of information is itself part of the narrative that is required to succeed in this particular model of value formation. The information is not 'out there', ready to be excavated and utilised in the race to surplus value, but crafted by and for people that exhibit particular traits and leanings. The self-interested profit-seeker is not a real person or a reflection of actual behaviour, but an ideal image that economic behaviour is steered towards. I argue here that most of current monetary forms rely on similar narratives of why its value is stable, and what is required of actors to keep it

that way. It is the continued adherence to these unwritten rules that gives the system its strength, not the strength of the system that allows its actors to act in accordance with its rules.

A monetary network is thus really an information network and behaviour within it cannot be reduced to self-interest, state backing or specific normative systems. The elements that are given as reasons for *trust* will play different roles in different systems. Because of this, the so-called 'real economy' of goods and the 'monetary economy' should not be juxtaposed, as expectations are integral to how money manifests – *the monetary system is not a passive reflection of a real economy*. It is therefore impossible to hold complete information about any economic system, for the purpose of explaining its workings, as the information itself is part of what is upholding that very system (Dodd 1994: 157-158).

In other words, it is possible to trace how assumptions about the roots of money affect aspects such as income inequality and pooling of power among elites, as many have sought to do. But, if criticism of this system is undertaken with the same basic assumption that money is a neutral mediating tool with which self-balancing markets operate (with rational self-interest as the driving force) then the same knowledge is being reproduced. If the system is seen as operating the way it does specifically *because* this is the general assumption, one can instead attempt to formulate alternatives. By viewing these features as specific rather than essential, the political aspects of economic theory are brought into light. Markets and currencies are not neutral; they are results of particular conceptualisations and actions based on prevailing logics. The pooling of money and power among a minority elite is not an unfortunate side-effect of inevitable economic development, it is the result of a specific logic and design in action.

Money is not fundamentally a comparative tool that quantifies different qualitative features of commodities, it is the other way around: the commodities only have values that are comparable because something else is money (Simmel 2004: 158). Money is the expression of the will of people

to acquire things they do not have and what upholds a monetary system is the continued belief that the money will enable them to do so.

Largely based on the assumptions critiqued here, cryptocurrency and token development therefore has a flawed fundamental understanding of money at its core – what matters is not finding specific technical qualities as to why money has value, but that whatever is presented is trusted to be true and continuously believed. For example, it is evident that merely holding enough cash is not always enough to purchase something, due to other barriers of access that may stop actors from being allowed or able to transact. This could for example include entry to certain stock markets, sellers deciding that they do not want to sell to particular individuals, or that the items/services are not available in certain regions. Even though this is the case, it is necessary for money *as a transactional tool* that all involved parties fundamentally believe that they will be able to use the currency to acquire whatever they desire, as long as the quantity is enough (Dodd 1994: 152-166).

Similar assumptions are baked into cryptocurrencies, where it is fundamental to the narrative of DLTs *as a transactional tool* that it is universally and equally accessible to anyone in the world, despite this evidently not being the case. This is for example evident in the need for internet access; a device to access the network through and store data on; if not using third-part exchanges, some technical knowledge as to how to access the DLT networks to begin with; and most fundamental of all, be literate, have knowledge of the existence of the cryptocurrency or DLT platforms, and the starting capital to purchase tokens.

In other words: I argue in this thesis that *trust* is at the core of any money form, and that this is fundamentally at odds with statements that cryptocurrencies are to be celebrated because they somehow remove the need for trust. However, to develop my argument further, I note that there is a difference between trust in specific monetary forms and trust in money as a concept. Currencies may face dips in confidence among its users, for example in trading between currencies, or the more recent examples of Bitcoin's rollercoaster-like valuation trends since it was first created. This

represents market confidence in the currency as a store of value, *as a commodity*, and does not affect the type of trust that is needed for it to work as money (Dodd 1994: 143; Dodd 2018).

The traditional financial system does indeed openly require trust in middlemen, such as central banks, advisers, regulatory frameworks etc., but it also requires trust in money as a tool. This means that money is not a neutral mediator, but something that requires continuous *work* to keep its value. Because of this, the idea that a currency can be free from trust, or trust-enabling due to its technological features is also at odds with the idea of rational self-interested profit-maximising being the driving force for the value of commodities that money merely compares and expresses. Rather than viewing markets as self-balancing mingle points for commodities with inherent values and actors who engage with each other only to make profit, where money only plays the role of mediator to these relations, the values that actors are trying to maximise actually only exist in (and because of) the social relationship between them (Dodd 1994: 136-142) and this also applies in the DLT space.

What this demonstrates is a tension between the different aspects of the golden standard for money from these economic perspectives – something that is 1. a store of value, 2. a medium of exchange, and 3. a unit of account. DLT tokens and cryptocurrencies are argued to use their technological features to establish trust in it mainly as a store of value and as a unit of account, hoping that it will automatically also work as a medium of exchange due to these factors. This seems to be in line with neoclassical economics in that a particular commodity with value through scarcity becomes a value comparator for other commodities and thus gets used as a medium of exchange. However, what it actually does is reveal that even manufactured scarcity fits within this model – something that does not exist outside of its own frame of creation, and which has no physical properties can be used as money. This should go against the idea of markets being a neutral sum of all that exists within them, as it is demonstrably possible to introduce something *imaginary* which also has value in itself as a commodity and which can be used as a medium of exchange. However, this only poses a problem

for common economic perspectives, and not for the view that this thesis rests upon – on the contrary it highlights the social and imaginary elements that are essential to *all money*.

I have argued here that *value* is something malleable and socially defined. This, however, is different from saying that value is defined by the socially agreed price through supply and demand. Bjerg (2014) challenges this common assumption and argues that while economic analysis may explain the functioning of money as the pricing of assets, this merely addresses the question of how money works, not what money *is*. As these perspectives tend to brush over these fundamental questions, the remit for how money works is also restricted to the frames of reference that make up the general understanding of how money works as well.

To explain why this distinction between *price* and *value* matters, Bjerg (2014: 19-28) (using Zizekian theory), further suggests that as financial instruments refer to underlying assets, their prices are meant to *symbolically* represent their value. However, in line with what I have demonstrated earlier in this chapter, Bjerg likewise argues that this is a simplification, as *value* is not only elusive but whose elusiveness is the source of financial trading (2014: 21). Price in the marketplace does not come as a result from an inherent value of an asset itself, but is determined through socially agreed definitions and patterns of action – price is the result of the particular social organisation and operation of markets. However, Bjerg refrains from referring to price as completely arbitrary and detached from its underlying assets, as value resists being completely symbolised. Using Zizek's definition of 'the real', Bjerg argues that we can never know anything's *actual value* as things outside of our ideological and performative realm prevent us from having complete control over an asset's price. But simultaneously, and perhaps paradoxically, 'value' or 'the real' may also not exist, and the sum of all of our socially constructed approximations is all there is. This paradoxical relationship between value and price is best expressed when closely examining what actually happens in the marketplace.

> ‘Ideally, the seller of an asset believes that the price he receives exceeds the value of that asset. Conversely, the buyer should believe that the value of the asset exceeds the price.’ (Bjerg 2014: 24).

This demonstrates that there are two simultaneous price formations for the same asset, and which to a lesser or greater extent may be informed by what the asset is meant to represent, (i.e. the underlying company of a stock, production expectations for a derivative, etc.) but none of which can be claimed to represent the *value* of this asset. Value appears to be more subjective and related to the desires of the transacting parties. Because the buyer and the seller are approaching the asset with different motivations, expectations, and moral or political values, their perceptions of the asset’s value differ. They both want the best deal, but both the asset and what ‘the best deal’ is mean different things to each of them. This also means that they may both walk away believing that they got the better end of the bargain.

Bjerg (2014) further highlights that this straightforward and individually motivated establishing of price and value in a transaction is far from how trading typically happens in financial markets, as high-volume trading of stocks, currencies and other assets rarely is about the meeting half-way between differing interests for a price definition. This is to say that most investors into stocks, for example, are not basing their investments on how they think the companies will fare in the future or because they are hoping to hold their shares and see their price grow with the company. Rather, traders in financial markets today usually have the same desires and are only looking to make speculative profit from fluctuations in the market. In other words, the price formations are not related to different goals but different ideas about whether the price is going to increase or decrease in the future.

For cryptocurrencies and DLTs this is even more evident – they constitute a completely see-through version of financial trading. The purest crypto-assets do not even have underlying companies, loans or physical objects at all, they are merely tokens that represent *nothing* and which can only be

priced based on the different speculative ideas about how their price is going change in the future. If value was intrinsic and if we could know it, there could be no differing price formations and no trading. The very possibility of selling cryptocurrency as assets demonstrates the flaw in the assumption that their *value* comes from their technical properties. As I have argued elsewhere in this thesis, this means that price and value do not differ because of 'information asymmetry', or because we do not *yet* have perfect models or knowledge about the markets (but which many economists are hoping to provide one day), but instead because value, like money itself, is a social agreement and so can be based on different ideas about this agreement. This also ties in with my elaboration on the concept of speculative value in Chapter 3, which demonstrates the temporal element of valuation and pricing.

Bjerg (2014: 26-27) argues that the difference between the value of a 'successful' investment is merely the difference in price formation between the time of purchase and the time of sale. This is similar to how speculative value only turns into actual value as the imagined future becomes the present. Both these perspectives bring different aspects to the complete picture (to whatever degree this is possible), to complementarily merge the social expectations and valuations that make all actors believe that they are getting "the best deal", with the temporal factors that enable the actors to take their imagined futures into account for their present profits. As this process takes place regardless of whether the asset has any underlying reality or not, we must always remember that *value* is inherently an unknowable thing – for the crypto community, there is perceived to be no fundamental ontological problem with separating the speculative economy from the so-called real economy.

In comparison to other forms of money that neo-classical economic perspectives tend to criticise, and which ironically are echoed in the pitch for cryptocurrencies, there is a tendency to chastise states and commercial banks for 'printing money'. As 97% of money in circulation is created by the commercial banking sector when they issue new loans, the 'printing of money' does not break any

fundamental laws of monetary value (McLeay, Radia and Thomas 2014). The argument is that this leads to increased inflation, a part of the narrative that seems to stick despite the fact the inflation rates have remained managed and have hit record lows since the financial crisis of 2007-08[24].

In contrast to the neo-classical perspectives, which would like to see the economic elements of society separated from the social elements, this thesis rests on the fundamental argument that this is not possible. *The social* and *the economic* are not at odds with each other, but rather part of the same process. Zelizer (1998) argues that traditionally influential concepts in economic sociology, such as 'embeddedness' (Polanyi 1957; Granovetter 1985), primarily stem from the assumption that there is economic, rational, individual action on the one hand, and fixed, cultural influences on the other. An actor is assumed to have the possibility for "pure" economic action, but is limited in choice and possibility by their position in social networks and their accompanying social ties. Contrary to this, the concept of relational work instead suggests that economic action is never purely rational, or utility/profit-maximising, but always specifically tailored to the particular relationship between the actors involved in the transaction. These relationship rules are in constant negotiation, and relational work is required to balance expectations and actions along these lines, as actors often have different ideas about what to expect, as well as competing attitudes towards the proper use of money depending upon how it came into their possession (as gift, payment or entitlement in Zelizer's terms).

Zelizer (1997: 6-12, 204-214) thus argues that all economic relationships also are social relationships and her empirical work has provided wide-ranging examples of this in practice. There is no practical or theoretical difference between the so called 'real' economy and the 'particular' economies of domestic monies or between special-use monies (such as food stamps) and legal tender. Indeed, even the circuits often presented as the epitomes of rational action, the financial markets, only work

[24] In the UK, this was true in the years running up to and largely through Covid-19, but was then followed by a period of higher inflation starting in 2022 and slowly tapering off at the time of writing (April 2024).

well because their discourse and power dynamics are so ubiquitous that the instrumentally rational propensity to trade shared by participants is perceived as naturally occurring (Wherry 2012; 2014). In applying this insight to the DLT space, I argue that that crypto communities all engage with each other with the same fundamental understanding of what make up markets and cryptocurrencies/tokens. As will be explored in Chapters 6-9, different organisations may have very different ideas about what the DLT space is for or where it is going, but neo-classical economic assumptions are usually at the core, regardless of how they are applied in practice. This is also an effect of the shared level of cultural and social capital that the groups of people within the DLT communities possess. They utilise these positions in the continuous performance and reiteration of these expectations and the overall narrative.

As I have touched upon, relational work is the collective term for the continuous practice of creating, upholding, negotiating and repairing economic relationships, but it also provides a counterpoint to the idea of rational action's expansive and corrosive nature, explained by Polanyi as a disembedding of the economy from social relations (Zelizer 1998). Relational work suggests that the economic sphere is not and never has been more or less embedded – it is not a variable. Instead, *all economic action is constituted by specific social relations*. This also infers the inverse, that the economic was also always a part of the intimate. Intimate relations have their own logics of exchange, but are not free from economic elements (Bandelj 2012; Zelizer 1997: 6-12). This means that relational work is a powerful tool to help us understand how shaky the ground is under claims of DLTs being able to separate the power to create money from the political and social world. Using this insight, I call into question the *possibility* of DLTs to be free from influence, and the *possibility* of cryptocurrencies and tokens to have value that is determined by their scarcity rather than the trust in it as currency that the surrounding communities continuously work to uphold.

However, the concept of relational work goes beyond situating economic activity in particular cultural contexts. As clarified by Bandelj (2012), it would be denying Zelizer's contribution its wider

potential to only view relational work from a micro-perspective, where relational work is used to explain how transactions and economic behaviour appears between people, without applying its fundamental reasoning to the underlying assumptions about the nature of markets. But just as relational work questions rationality as the force of markets, it is insufficient to replace 'rationality' with 'cultural norms' as the explanation, without further analysis (Zelizer 2007). Bandelj (2012) also highlights how affective dimensions, such as empathy and sense of belonging, influence the structure and enactment of particular relations. For example, empathy can play a role in establishing a personal connection that may be mobilised to legitimise alternative perspectives within a transaction relationship. Successful relational work may also have an empowering dimension that shapes the structure of circuits or inform future choices for economic cooperation.

Relational work provides a framework of monies and economies as processes consisting of the relationships of actors involved in transactions and which are both shaped by and continue to shape the rules and implementations of themselves. The value of money, as well as the trust in money as a transactional tool is not upheld by static features, rational or cultural, the 'work' to uphold its status takes place between people as part of their relationships and interactions. We can from this perspective view different monetary systems as circuits – constellations of relationships with specific rules and currencies that overlap each other and sometimes involve the same actors and goods.

The work on the borders of economic relationships and separation of networks partly consists of earmarking (Zelizer 1997: 21-25): the establishment of what money belongs in which circuit and for what purposes. Zelizer (2012) explains how the economic concept of mental accounting does appreciate that people have ways of differentiating money but argues that this concept is still missing some crucial elements. Earmarking is not merely the act of differentiating money for individual, rational purposes, it is part of the boundary-drawing of relational work and has implications for how economic circuits function.

Anything in the physical world has the potential of being currency and to be earmarked for particular purposes. For example, Gibson-Light (2018) studied alternative monetary arrangements in American prisons, where there has been a shift away from tobacco as the primary proxy for US dollars. Instead, Ramen noodle packs are replacing cigarettes, and the author argues that this has come as resistance to increasingly harsh conditions and services for inmates, particularly concerning food provisions due to a wider shift from an individual treatment orientation to an outlook on prisoners as groups of consumers of public services. Whereas cigarettes make some sense to be used as money from an orthodox economic point of view, due to their durability, ease of transport, divisibility and relatively high value, noodles are food. Some of the main criteria for money as understood by Austrian and neoclassical economists is that the token has to be rare and not of high use value, but noodles are in this context both currency and sustenance. They want the tokens not for accumulation's own sake, but because it is in itself a sought-after item.

Gibson-Light (2018) further notes that this is not an isolated occurrence in a few prisons, but a coordinated national effort, suggesting that the food items are not merely standing in for dollars, but behave as a currency in their own right. Rather than the currency being the exchangeable good in a black market, it is in itself what many inmates seek to consume. Gibson-Light argues that expressions of resistance to prison life changes over time, and so does what is valuable in the prisons. In a system of reduced spending on food, having access to and using food items outside of normal provisions can be a subversive act. When the social reality of being an inmate changed, so did the preferred way of resistance to the harsh life in prison. Cigarettes, which were symbols of withdrawal from one's reality – a type of control over one's life – were replaced by food stuffs that highlighted the new problem of subpar living standards. As the prisoner is transformed into a consumer, the way of resistance and displaying control also takes on a consumer orientation. Gibson-Light also points out that with official provisions of food becoming smaller as well as unpredictable, a pack of ramen is always the same. The regularity offers consistency and predictability. Furthermore, this behaviour also reflects wider shifts towards acceptance of the

economic narrative that glorifies austerity and individualism – rather than rejecting prison life, they are consuming their way out of austerity.

Relational work and earmarking, together with the discussions on the origins of money allows us to move away from seeing any monetary form or system of exchange as dependent on its features or its issuer. It allows us to view money as expressions of very particular cultural/social/economic configurations that are shaping reality for the actors involved and simultaneously being shaped by the performative actions of those very actors. The existence of multiple monetary forms within the same society is not problematic and not a new phenomenon.

The inflationary pressure and economic instability that neo-classical economics accuses fiat money of causing is part of a narrative that reflects their *particular view* of money and value. Despite these ideas, inflation has not skyrocketed and economic instability has not ensued as an effect of money produced through the issuing of loans by commercial banks, or by the government using tools such as quantitative easing. Proponents of DLTs, however, continue to claim that this is the case. With the perspective outlined in this and the previous chapters, we can instead start to see how the avalanche of conferences, podcasts, webinars and Youtube-series on DLTs perform an important narrative function for the value of their cryptocurrencies and tokens, but also for DLTs as monetary vehicles. An innovation that truly did produce value purely by its own scarcity and which could bring an end to economic instability would not have to be sold this aggressively.

An economic tool that would work that way is however not a reality, and cannot be a reality, because all currencies, formal or informal, physical or digital are social agreements, performed through particular political, economic and technological arrangements. They reflect the consensus of what is thought of as stable for exchange. It is when we remember these arrangements that the claimed neutrality and security of cryptocurrencies can be called into question. There is no even playing field where markets can play out according to perfect knowledge and supply/demand. Money in general, but cryptocurrencies in particular are infrastructure for the ideological

assumptions that stem from Austrian and neoclassical economics. The narrative of these illusory properties acts as an 'active utopia' (Bauman: 1976), a goal that orients action towards it, despite not being possible to attain. It is unlikely that the proponents themselves see their narrative as merely a moral guiding light, in part because of how much money is invested into these new markets and how much *more* of the 'institutional money' they are expecting to come, as expressed by Paolo Ardino, CTO of Bitfinex, during his presentation at CryptoCompare Digital Asset Summit 2020 (Ardino 2020). It becomes important to assess how DLTs are being used for the purpose of profit extraction and the pulling of new investment from traditional finance and the general public.

4.2 – Conclusion

This chapter has served the purpose of adding depth to the patterns of organisation typical of financial markets and the platform economy that DLTs also tend to follow. What has been established is first of all that all these sectors adhere to neoclassical economic assumptions about value as being the result of the scarcity and integrity of a particular commodity, which then acts as a comparator of value for other goods, services, companies or markets. As I have highlighted, the main problem with this assumption is that it has no historical precedence, but most of all that it is rife with contradiction. For something to be purely a comparator, it cannot possess a manipulable own value, but neoclassical economic doctrine wants a monetary form to act as both store of value, unit of account and medium of exchange at once, all self-regulated through supply and demand.

If neoliberal economic organisation only ostensibly follows neoclassical economic assumptions but act according to other ideals, then we must focus on the steering power of *narratives* and *imaginaries*. By connecting value to the social relations between the actors that make up the markets, as exemplified by Dodd (1994; 2014) and Zelizer (1997; 2007) among others, value becomes something temporary and completely social – something that only exists because of people, not something that needs to be protected from the subjective. From this assumption, I have then used examples from Konings (2018) about value being plastic rather than elastic, because there is no *real economic* limitation to how we value things, as well as Bjerg's (2014) contribution about

how value always represents different things to those involved in a transaction – the price of a commodity can remain the same, but both the seller and the buyer are walking away thinking that they got the better deal.

This is important in our understanding of DLTs, because the main selling point is that socially 'manipulated' money and markets *is the problem* and *needs to be corrected*. In their attempts to correct things, we can use the concepts of speculative value (Davis 2018) and the mobilising mantras of decentralisation and community to demonstrate how DLTs are being put in place as infrastructure that funnels economic activity according to very particular rules and for very specific goals. It follows authoritarian-neoliberal patterns of liberalisation and deregulation, which benefits those who wield control over the narrative production and the collection of transaction fees and other 'rentier' behaviour, while simultaneously presenting economic prediction and forecasting as being based on information and skill. This leads to a shift of responsibility onto the individual, about things that in reality are completely unknowable. Although unknowable, the swaying power of mobilising the right people and large enough pools of money means that some are more influential, but those with little influence are still encouraged to blame themselves and their lack of insight for failed investments, even when they were doomed to begin with.

We can in summary of these literature review chapters see that DLTs fit well within the traditional financial world, that is constantly seeking to expand its speculative reach, and which also depends on always seeming to be at the technological and economic forefront. It is important for actors to seem like they always know what is going to be the next big thing, regardless of future outcomes, in order to collect the profits today of what is promised. DLTs and financial markets alike deny the steering power that social, cultural and economic capital has over their sectors and they furthermore ostensibly seek to replace what on the surface looks like manipulating central banks, with technological solutions that manipulate activity according to what will benefit their narrative and profit-seeking the most. In other words, money and markets do not in actuality have to operate on

self-interest, but we have allowed those with power and influence to put in place a system that rewards this type of behaviour.

With this in mind, I have in these four chapters contextualised and narrated the contingencies and foundations of the contradictions and inconsistencies that are expressed about DLTs in the sectors that seem most excited about them. Through my review of relevant sociological theory as well as other DLT focused academic material, I have established a strong foundation for the focus of this thesis, as well as an analytical framework that highlights the design, language and reach of the economic, technological and (inadvertent or deliberate) political narratives that are associated with DLT development and operation. Next, a methodology and methods chapter will follow. I will there explain the design and guiding principles I employed to best address the aims of the research and how the insights from the review of academic literature above connects to my choice of sample, approach, data analysis, and conclusions.

Chapter 5 – Methodology and methods

To address the aims of the research, qualitative data collection was chosen as the best approach to explore the topics in depth. Because the thesis addresses not just a particular phenomenon, but the whole DLT space and claims made about the technology as a whole, a combination of methods was chosen. This included semi-structured interviews, observation, and literature analysis, together constituting an ethnographic approach to understanding the DLT space. I chose to approach the data holistically, and analyse emergent themes based on the data, compare findings to themes identified in theory ahead of data collection, as well as consider narratives that reflect wider developments in the most notable sectors and society at large. This chapter will discuss the motivation behind my choice of methods, my epistemological and ontological positioning and the challenges I faced during the research process.

5.1 – Epistemological and ontological positioning

Drawing on Mason's (2002: 14-16) discussion of ontological categories, this research is concerned with processes, perceptions, ideas and relationships. Following a constructivist ontological position, findings are not to be viewed as objectively observable, but as created and upheld by people; always in flux; and relative to their spatial and temporal contexts. This approach prompts continuous reflexivity of both the nature of the observed phenomena, as well as the contexts in which they appear and the position of the researcher in approaching and analysing them as objects.

The goal was not and is not to ascertain concrete causal relationships that are stable over time but to identify patterns in ideas and actions that can connect phenomena with each other as existing within the same overarching structure of knowledge. This follows a subjectivist reading of constructivism that questions the knowability of an issue and the status of social reality outside of interpretation (Pawluch 2019). In other words, this research has progressed with the assumption that social phenomena depend on the people that are involved. Although certain features of the social reality can appear stable and to have clear causality, this is ultimately dependent on a continuous renegotiation between all actors involved. However, the general assumptions of actors

about the world as well as the relationships between them have not been formed in isolation, but informed by previous events and the information available to these actors.

My approach to the nature of knowledge also applies to the topic of the research, as blockchain technology is fundamentally upheld by the social 'truths' about them and exist because of the relationships between the *actors* and the *story* that is told and rehearsed by its relatively small surrounding group of proponents. My understanding of the world of blockchains is epistemologically consistent with my approach to the social reality in general as anchored in beliefs about its reality.

These epistemological and ontological assumptions most closely fit within the scope of what is known as a retroductive research strategy (Blaikie 2000: 108-112). This means that similarly to a deductive approach, data and observations are viewed as interpreted and therefore not 'true' depictions of reality. Because of this, possible explanatory models must be devised and tested against the phenomena under study. To produce explanations, the social researcher must therefore first construct a model of what is to be expected and which can be tested on the objects of study. As expressed by Wad (2001), '…retroduction aims to specify the necessary and sufficient causes and conditions for the phenomenon to come into existence'. The phenomenon is seen as 'real' and verifiable through the interpretation of collected data, as confirmation indicates the existence of the expected phenomenon and its relation to the involved parties (Bhaskar: 1979: 15). This is somewhat shared with a deductive approach, but a deductive strategy also assumes that there is a social reality that would be possible to describe perfectly if our methods were not inevitably flawed and that what we instead should do is to use our research to refute what is deemed to be faulty depictions and interpretations. As this assumption tends towards positivism in its underlying understanding of the social world, a retroductive approach instead posits that social research should demonstrate the relevance of its theoretical explanations in terms of *tendencies* in interactions between abstract concepts and physical entities (Blaikie 2000: 109).

A retroductive strategy makes far less universal claims to truth than both its inductive and deductive counterparts, because it does not assume that the theories produced are either definitive descriptions or conclusive rejections of faulty understandings. It does, however, assume that the research has validity for the particular problems and incidences that it studies. Because these are based on an explanatory theoretical structure that can be applied to broader themes, this allows for generalisation that reaches beyond the data collected, as the affected phenomena may be globally contingent. Meyer and Lunnay (2013) argue that the retroductive approach should be seen as complementary to deductive foundations in theory-driven sociological research. They suggest that although deductive approaches rooted in critical realism also start from theoretical assumptions in their approach to data collection, they are stricter in their adherence to expected explanations and less open to new interpretations that emerge from the data collected.

The form of constructivist epistemology employed in this research therefore assumes that while objects, thoughts and ideas are socially constructed and that accounts of both respondents and researcher, as well as observed phenomena and analysed texts will be subjectively mediated (Jessop 2005), the phenomenon under scrutiny exists in its current perceived form due to its social contingencies (which include the social contingencies of the researcher). Furthermore, Hacking (1999: 12-14, 21) places a distinction between addressing *objects* and *ideas* as socially constructed. For example, the *object* of 'the economy' obviously is not an inevitable force and it would be unnecessary to point to its historical and social contingencies, but one could argue that the equally socially constructed contemporary *ideas* about how 'the economy' operates and progresses often result in what appears 'natural' and inevitable. This means that while the fundamental assumption is that multiple contingencies inform how social phenomena appear and are upheld, it also matters how they are perceived to work to those involved and to those observing from outside of the event or phenomenon.

In an interview setting both respondent actor and researcher only have their own particular views of particular social phenomena. Similarly, actors studied in observation or the authors of analysed literature operate with their own subjective views of what is occurring and why, which cannot be known by the researcher. Because of this it is assumed that the objective of the research is not to stay true to experiences of respondents, or to excavate proof, but to explore the possibilities identified in theory and whether they have bearing in the active conceptualisation of the issues interrogated (Emmel 2013: 53). The 'reality' that data generates provides only a brittle, fragmental representation, created in the interspace between researcher and respondent/observation/piece of literature (Roberts 2014). It is important to remember, however, that while the reality of a social phenomenon described is dependent on these particular, contextual and temporary perspectives, all actors play a creative and performative role in the way that reality is perceived. This 'knowledge' about reality thus has an impact on how future ideas about reality are perceived and manifested. A guiding principle throughout the research has therefore been the Thomas theorem: 'If men define situations as real, they are real in their consequences.' (Thomas and Thomas 1928). If actors think in a particular way about the reality of money, blockchain technology or societal functions, and act accordingly, then some of the consequences of their actions are the same as if those assumptions were true. The information provided by respondents, phenomena observed, and themes/tendencies identified in literature were therefore not only considered as accounts of what has happened and expressions of particular views and thoughts, but as statements that are possible to situate within wider narratives about the world, that lead to particular consequences. However, this is not to say that it is only the definitions and narratives by actors that decide what is true about the reality of social phenomena, but that accounts need to be considered both at face value and as part of a wider set of ideas.

5.2 – Sampling strategy

Given the ontological and epistemological positioning outlined above, I adopted a sampling strategy that reflected these choices and perspectives.

The strategy employed in finding potential respondents, conferences to conduct observations at, and grey literature to analyse therefore largely followed what Emmel (2013: 47-62) calls a theoretical or purposive sampling strategy, where the identification takes its starting point in the theoretical framework. This included considering what type of structures that DLTs are embedded in, as well as the sectors that were identified as most actively involved in the implementation of the technology. By conducting some early desk-based research into academic publications on DLTs, it quickly became clear that most articles fell within the disciplines of computer science, economics and engineering, but geared towards topics (or even product solutions) that concerned the wider business sectors of Finance, Energy and Law. I therefore chose these three sectors as organising categories to concentrate my research efforts on. This choice had two functions, to delimit the scope of the research *and* to ensure that the material I engaged with did not stray too far from the aim to understand claims about democracy, which were more prevalent in these three sectors than for example purely technical papers.

As discussed earlier, the data that can be gained from a respondent, observation, or document, however, is not excavated as an essence of an actor or what they represent. The account of a respondent, an observation, or a publication were therefore never considered to be 'typical' cases to be extrapolated and generalised to a total population. The data is not snatched out of its context and analysed for 'what it is', or provide a coherent picture of a whole population – the investigation will never be fully concluded. It is the relationship between ideas and data that is of importance and the approach chosen therefore assumes that ideas should guide the selection of potential data sources. This notion is what separates the strategy from what is known as purposeful sampling, where data sources are chosen due to being 'information-rich', as suggested by Patton (2002:230). The drawback of considering data sources as *containing* information is the assumption that data is excavated in a neutral way by the researcher. Instead, I chose to adhere to moving between theory and data and acknowledge the contextual subjectivity of the data and as not being representative of either actor or researcher, but as a result of the interaction, observation, or engagement.

A strategic choosing of cases may appear 'ad hoc', but is rather a matter of systematic decision making and flexibility. As expressed by Finch and Mason (1990:28) 'theoretical sampling involves a search for the validity of findings rather than representativeness of study populations'. From this perspective it is also possible to address concerns about verification bias, a criticism that is sometimes voiced against research that takes theory as its starting point (Roberts 2014). Although specific relationships within a structure are not to be seen as fully representative of their overarching structure, a theoretical framework can be applied as a fundamental understanding of a system, while allowing for investigation of the specific forms that relationships and phenomena take within it. The selection of potential data sources that could highlight phenomena identified in theory is thus not a matter of verification, but a choice that allowed me to explore the research questions directly.

With the above points in mind, the sampling strategy employed was designed to find potential data sources that where directly related to the chosen themes, research questions and sectors.

Furthermore, to source interview respondents, the attempt to identify potential organisations that fit within each of the three sectors proved to be difficult, due to overlapping and interrelation of sectors. Organisations turned out to represent developments in multiple or all sectors at once and were therefore initially approached for their apparent fit within a one sector more than others, but were considered in multiple ways during analysis. All data was approached to allow for analysis both within and between sectors, but even more so for extrapolating overall developments into the overarching themes of Trust, Democracy, and Humanism, which are explored in chapters 7-9.

5.3 – Sample and interview respondents

Based on the initial general assessment of the DLT space, as well as the chosen sampling strategy, I conducted initial desk-based research to find academic articles, conference papers and grey literature and picked out those that were most relevant to the topics of my research questions for further sifting. These were then reviewed, categorised (which resulted in the identified prominent

sectors Finance, Energy and Law), and narrowed down to the final sample for the literature analysis portion of the research (mainly publications by the Big Four accounting firms, due to their influential role in the financial services sector)[25].

For the purpose of sourcing respondents to interview, I decided it would be most beneficial to get insights from organisations currently using blockchain technology. To find these organisations I utilised the full range of literature I had initially collected and compiled a list of all organisations (including private companies and non-profit organisations) that were mentioned as prominent in their fields; that represented niches within their sectors; or that were described as creating new markets or spaces within markets. Among these, I focused on finding organisations that seemed to represent the identified prominent sectors of Finance, Energy and Law. Early on, however, it became evident that very few organisations that operate DLTs are focused on Law exclusively. This led me to remove Law as its own sector and instead categorise organisations by the other two (Law as an organisational category was however still important. Regulation and legal classification were raised as important questions to all respondents that were eventually interviewed).

Following this initial research, I attempted to find contact information for each of the organisations, which was collected together with a general description of the organisation and their use of DLTs. In many cases, it was difficult to find relevant contact information[26]. Most organisations only provided a generic 'info' or 'contact' email address to the public and only a few had information about specific people to contact. Wherever possible, I searched online for more information on the names I could find, mainly using Google and LinkedIn, which resulted in a few more personal email addresses or LinkedIn profiles. I also started following all of the organisations on Twitter (where available) and tried approaching those with no other contact information by direct message on Twitter.

[25] See subchapter 5.4.3 for more detail on the data collection process for the literature analysis and subchapter 5.5 for how this material was approached analytically.
[26] The lack of contact information is an interesting contrast to the focus on transparency and openness that so much of the community is praising DLTs for enabling.

This process resulted in a list of 61 contactable organisations.

For the observation portion of the research, I also decided to attend as many DLT focused conferences as possible, in part to secure more contacts and potential respondents, but also to observe and take notes on what was said during presentations and discussions[27]. This data could benefit the research by giving opportunities to witness interactions between participants and more informal behaviour, in contrast to the usually curated appearance of DLT related speech and publications. Five relevant conferences were chosen based on recommendations from websites catering to crypto supporters and/or investors and which published lists of upcoming crypto/DLT conferences described as the most worthwhile. However, I was only able to attend one. This was the CryptoCompare Digital Asset Summit (CCDAS), held in March 2020. Shortly after, the first lockdown started due to Covid-19 and all subsequent events were cancelled. However, as events started to take place online instead and as the interview data collection was completed, I attended/viewed a further three similar but virtual events in 2021, which were DeFi Summit 2021, Global DeFi Summit 2021, and Bloomberg Crypto Summit.[28] As with the conferences I had planned to attend in person the previous year, these three conferences were chosen based on being listed by multiple websites collating crypto/DLT event recommendations, but also due to being open to attend virtually by members of the public (and not exclusively by membership or invitation). The topics covered and points raised during these conferences were very similar to that which came up in interviews, observed at CryptoCompare, and found in grey literature, and thus added less and less by each conference to the overall research data. Following the final of these three events, I revisited my field notes and could no longer pick out any new relevant data for my research. I therefore concluded that a satisfactory level of data saturation had been reached and decided that there was no need to attend any further conferences. Insights from the conferences were included in the analysis, and

[27] See subchapter 5.4.2 for more detail.
[28] DeFi stands for Decentralised Finance, and is a term used for blockchain-based finance, ostensibly without intermediaries.

were treated as observation data, but also helped contextualise my understanding of claims made by respondents. The presentations and themes at the conferences were useful to expand my understanding of overall language choices, narratives and themes within the DLT space and which could be compared to data from the interviews.

In addition to the organisations found through desk-based research, another five of the organisations I approached at the CCDAS 2020 were interested in taking part in the research, which brought the total of contactable organisations to 66.

Starting in late January 2020, I proceeded to contact a few organisations per day. I limited the number of emails to prevent the possibility of having too many replies from those who were interested in taking part at once. Each contact was sent a similar message (see Appendix 2), but which was adjusted and personalised to be relevant to each specific organisation. A diary of data collection was kept of all contact attempts and updated to reflect positive and negative responses, as well as nonresponses.

This process was revealed to be more difficult than anticipated. Over the course of eight months, all 66 organisations were sent an initial invitation, and those who did not respond were also sent a second and third round of reminders. The reminders to those who had not replied were sent with a couple of months in between each round. The invitation email was revised multiple times throughout the process, in the hope of attracting more responses, which included changing the wording and adding deadlines to respond. I also made sure that all invitations were individually adapted both in the body text and subject lines to be relevant to each organisation, in order to avoid appearing as spam or a mass-invitation.

In total, 14 organisations expressed initial interest in taking part in the research. Out of these, eight led to completed interviews. One organisation wanted to give written responses, but never replied after questions had been sent to them. Four organisations were interested, but an interview was

never successfully scheduled. And finally, one organisation agreed to an interview and a time was scheduled, but they missed the agreed time, and subsequently two more agreed times.

I suspect that the situation with adapting to Covid-19 played a significant part in the low return rate, as some organisations expressed that they were struggling to keep up with their regular business. I also suspect that due to the low availability of contact information to specific people, many invitations ended up in rarely checked general inboxes within the organisations.

A second phase of attempting to contact respondents took place two months after the final interview. Several of the respondents had stressed the importance of 'the community' not only for their companies, but for the field of DLTs in general. I therefore joined a handful of online groups, mainly on Facebook, where I posted calls for respondents with a short description of the project. These groups had quite high traffic and several posts by various members throughout any given day. The posts that got responses and comments were almost exclusively those by companies that offered jobs; opportunities to buy cryptocurrency; or technical support questions. Obvious spam or suspicious links were usually ignored, but also posts like mine that offered no profit opportunity. I tried posting 3-4 times in each group, but without a single response. Similarly, posts by other researchers were also usually ignored in these groups. During this time, I also got a belated response from one of the organisations in the first phase of contact attempts. The company stated that while no one from their team had time to take part, they were happy to invite me to their community Discord server, where I could ask members to take part. As with the Facebook groups, however, 2-3 posts in each of the relevant subgroups on the server resulted in no responses, while other calls for technical support and business opportunities saw at least some responses.

The eight respondents that continued onto being interviewed represented a wide variety of organisations. This included large non-profit DLT networks and platform providers, small start-ups, cryptocurrency exchanges, consultancies, and educational institutions. Three organisations were operating within the Energy sector, four within Finance, and one in education. Three respondents

were women and five were men. All respondents were in senior positions within their organisations, including CEOs and heads of departments. I had presented the nature of my inquiry as relating to their whole organisation and with interest in their thoughts on the impact of DLTs on society. As the goal of the research was to gain insight into imaginaries and perspectives from those driving the technology, it was both expected and desired to speak with those having the most influence and associated economic, social and/or cultural capital (Bourdieu 1986: 241-258). In addition to the level of their positions within their organisations, they all agreed to be interviewed (or were selected by their organisations) as representatives/experts in their field and therefore all had an air of authority in how they approached the interview setting and questions. This meant that all eight interviews should be considered to be 'elite' interviews (Harvey 2011), which will be discussed in the next subchapter. See Appendix 3 for a table of all data sources.

5.3.1 – The people of the sample

To further illustrate *who* I spoke with, the most common tendency among respondents was to want to educate me about the technology. This was not uniform in expression, instead ranging from what came across as genuine interest in helping me understand the role of DLT/crypto technology in their organisation, to outright condescension. All, however, seemed thrown (or even annoyed) when questioned about the meaning/purpose/usefulness of DLTs and appeared to assume that this was self-evident. These reactions could have stemmed from the assumption that a researcher writing about DLTs should already know this. Potentially, however, their immersion in the DLT space and its associated values and logics may be giving them very few opportunities to contemplate those kinds of questions. It is worth noting that this arrogance of certainty was not evenly spread among respondents. Interestingly, only two respondents were at all keen to entertain discussions on the flaws of DLTs or potential biases and they were both women. All respondents came across as what could be described as 'tech-bros', who through a type of redefined performative masculinity present themselves as 'figures who can knot together rationality, technology, wonder, and enchantment' (Crandall, Brown and McMahon 2021). This was especially true for how 'founders' and 'leaders' in

the space were revered. The gospel of the magnificent tech future (whether genuinely believed or part of the sales pitch) very much permeated each of the interviews.

Personality-wise, all respondents came across as charming and likeable people – often disarmingly so. All respondents apart from one (working in education) possessed a high-energy eagerness in the way they approached the questions and presented their answers. However, the 'tactics' for how to educate me and 'win me over' differed significantly. One respondent adopted a condescending, matter-of-factly approach to any abstract or hypothetical questions, especially when veering away from what their organisation does.

5.4 – Data collection

The sample and sampling strategy reflected an intention to assess and critique what is being said and published about DLTs and cryptocurrencies by those that are influential and at the forefront of the technology. This is not merely a narrowing of sample population for the purpose of researching a manageable cohort, but allowed me to grapple with representatives of claims at the core of the DLT space *on their own terms*. By focusing on respondents, companies and events that represent powerful positions, rather than on the 'community' side of the space, statements and opinions can be assessed as the type of statement that is formative for the space. To produce a more complete picture, it was also desirable to capture as much of the environment surrounding these respondents and their statements as possible and as many forms of similar statements as possible. For this reason, I decided to take an ethnographic approach to data collection, albeit with a focus on interviews. The interviews were supplemented by observations at industry events as well as grey literature analysis of publications by influential actors.

5.4.1 – Interviews

In the period between February and October 2020, the eight interviews were held. Semi-structured interviews were chosen as the method because they allow for freedom of discussion, while remaining close to the research agenda. A semi-structured interview can be viewed as 'a

conversation with a purpose' (Burgess 1984: 102) and ensures a constant connection between the views of the respondents and the research questions. Although this form of interview may delimit the respondents' possibility of fully expressing themselves on the topics they feel are most important, it was more important for the research that discussions remain focused on the chosen themes (Bryman 2006: 321-324). If for example a narrative approach had been employed, discussions may have become centred around the potential of the technology or the novelty of the organisation, while a structured interview may have elicited too formulaic responses. A reason for choosing semi-structured interviews is that the flow of the interview can remain flexible, and that room can be allowed for respondents to take the discussion in directions that had not been considered by the researcher prior to the interview (Bryman 2006: 331-333). This approach did indeed work very well as discussions usually remained on topic, while respondents were able to take it in any direction that they wanted to. A set of questions were written in advance (see Appendix 4). These questions were to be used as guides for discussions, and different questions were skipped in each interview depending on what had already been covered in the open discussion with the respondent. Because the questions were only used to guide the conversation, they were not shared with respondents ahead of the interviews, with two exceptions. One respondent would only take part if they could see what kind of questions would be discussed and one organisation wanted to see the questions so that they could select who from their team would be best suited to take part.

Each interview lasted 50-90 minutes each and were recorded on a digital recording device. The total transcript time came to 8 hours and 39 minutes.

Other possible sources were considered at the start of the project. Focus groups were initially seen as a potential method, but due to the geographical distribution and likely busy schedules of respondents within the sectors, this would have been too difficult to organise.

The choice to use interviews as the main method of data collection was motivated by the qualitative nature of the research questions. While the drawbacks of using interviews include that information

is filtered through expectations of what interviews are about and that respondents may withhold information, they would yield first-hand views and thoughts of people who are involved at the front-line of implementing DLTs.

For the purpose of keeping record of both initial reflections and of unforeseen angles and perspectives, a journal was kept and updated immediately after each interview, while the conversation was still fresh in memory. Keeping a diary of thoughts and new developments was helpful in two ways: to ensure that inquiry did not stray too far from the topic and research aims; and that new insights could be incorporated into the understanding of the sector (Bryman 2006: 324-328).

Despite this effort to stay as close to the actual conversation as possible, Fontana and Fray (2005:695) suggest that interviewing 'is inextricably and unavoidably historically, politically and contextually bound'. Words always have ambiguity, regardless of how carefully formulated a question is. Interviews are therefore not neutral, but active interactions that produce negotiated, contextual results. The data produced through an interview does not give a 'true' image of the world through a respondent's eyes, but a particular perspective, formed between respondent and interviewer. (Fontana and Fray 2005: 697-698, 718). In addition to contextual and subjective understandings of topics discussed, respondents are likely used to the idea of the interview form of investigation. Because of this, a whole host of expectations goes into the interview situation, and what is said will be strategically constituted (Silverman 2017). The interview itself is a social situation (Mason 2002: 51-52, 64).

5.4.1.1 – 'Elite' interviews and Positionality

Further, it is important to be mindful of the position and power of respondents and researcher. All of the respondents could be considered 'elite', either economically or due to their possession of extensive knowledge, insights and networks within their sector. The 'elite' status of respondents and the relatively small and tightknit nature of DLT communities may have entailed particular issues during the interview process. These issues include respondents potentially withholding information

or being sceptical of the intentions of the researcher (Lancaster 2017). Li (2021) therefore suggests that it is important to consider your positioning strategy as a researcher, depending on what 'identity' the elite respondent has within their sector, such as a political, economic or professional elite. The respondents of the present project largely fell into the two latter categories. For economic elites, Li (2021) suggests that the researcher positions themselves as a neutral, non-profit stakeholder. She argues that economic elites tend to be cautious around profit-related topics but may also have opinionated judgements and usually describe issues from a perspective that reflects personal or company interest. To get respondents who are primarily driven by protecting economic interests to open up, Li suggests that they have to be assured that the researcher comes from a neutral position. However, she warns that responses from top level economic elites rarely diverge from what they or their company publish publicly.

Some respondents of this project would also fit into the category of professional elite, as they had a more academic background and approach to their development of DLTs. Unlike the neutral and economically disinterested approach that is needed with economic elites, Li suggests that professional elites have to be approached with the confidence and appearance of a perceptive, well-informed researcher. As this type of respondent likely has experience with academic work and already knows what social research entails, they are less likely to hold back information, but instead may see the researcher as less knowledgeable or be sceptical to what sociology has to contribute to the topic, or why the topic would be sociologically interesting. For this project, this category of elite most often took the form of technical experts, usually programmers or software developers. These respondents would need to be assured that I as the interviewer had at least a basic grasp of the technical side of DLTs to take my questions seriously. Some respondents would even attempt to 'test' my knowledge and/or check if I was following the discussion.

From the experience of this research, both of these described respondent types and described interview situations did occur to some extent. Several of the respondents did appear to see their

participation as an opportunity to promote their organisation and its services, or were careful not to divulge business secrets. Their position as experts in their field (either self-proclaimed or given as a reason for approaching them by me) did put some respondents in a position where they were treating the interview as a teaching opportunity. Some respondents were quite dismissive of critical questions, either as irrelevant to their business or as coming from a position of misunderstanding what DLTs are for. Dealing with these tenser moments (which were only few and far between) required a balance on my part between pushing the inquiries deemed important for the research and remaining on good terms with the respondent. In addition to considering the strategies suggested by Li (2021), rephrasing questions as deliberately 'unusual' or 'from a different perspective' seemed to ease the tension, as well as reassuring respondents that I was interested in their views and opinions on the topic for academic purposes. Among those respondents that were more familiar with social science, demonstrating that I did understand the technical language of what they were describing, and thus positioning myself as well-informed and perceptive, did help with certain respondents, while showing my curiosity and eagerness to understand their perspective from a humble position helped with others. One respondent even went so far as to try to anticipate what type of analogies and conclusions a social scientist might 'jump to' after they had said something they immediately wanted to retract,

> '…so I want to scratch the concept to try and liken [a DLT] to a hive, because then you are gonna be asking *who are the worker bees, who are the drones and who is the queen*' (CEO, blockchain energy company 1, 2020).

By identifying respondents as one or several types of 'elites' in advance, I was prepared for a wider range of potential social dynamics at the start of each interview. Utilising these strategies to pre-empt potential issues in interviewing elites, I was able to successfully navigate all eight interviews with the right tools to balance rapport and research aims throughout the conversations.

5.4.1.2 – Interview format

In part because of the situation with Covid-19, but also the geographical dispersity of respondents all interviews were conducted over the internet using online communication software. Platforms used were Google Meets, Microsoft Teams, Zoom and Skype, with the choice of platform left to the respondent. Half of the interviews were done through video chat, and the other half with only the telephone function. Trier-Bieniek (2012) argues that despite common concerns about the difficulty of building rapport when not being face-to-face, and that respondents could withhold information in a telephone situation, a large portion of people are now quite accustomed to virtual communication, especially respondents working in the tech sector and with DLTs. If semi-structured telephone interviews are combined with rapport-building written communication before and after the interview, Trier-Bieniek argues that accounts can actually be more honest than would be the case in a traditional interview setting. It could be argued that in the tech sectors in particular, but also in society at large (and increasingly since adjustments have had to be made due to the effects of Covid-19), video conferencing is so commonplace that rapport and behaviour is not very different in comparison to meeting in person.

All interviews were transcribed manually by me. All the recorded data and transcripts were stored only on the secure servers provided by the University of Leeds. In line with my epistemological perspective, the transcripts were not treated as complete representations of the conversations that were held, but as already interpreted versions of what was said (Kvale 1996: 182-183). Consent was given by each respondent at the start of every interview and information on data protection and storage of recordings and transcripts were given ahead of the interviews, as well as at the start of the conversation. Respondents were also informed that they may withdraw their consent at any time before the submission of the thesis. This choice involves a risk of data being retracted by the respondent, but is a risk that is outweighed by the benefit of building a trusting relationship with respondents. It may also have elicited more honest responses, as respondents were aware that they could withdraw after the interview if they came to regret some or all of the information given. All

respondents were also informed that no permanent aliases would be given and that all respondents and organisation names would remain anonymous.

The choice to keep all involved parties anonymous was based on the potential impact that the critical scrutiny through this research could have on their organisation. Some respondents willingly gave out information about their organisations that appeared to be for promotion of their services, hoping that their organisation would be named. But despite this 'marketing' potentially being a reason some respondents took part in the research, I still chose to keep them anonymised, as we do not know what impact my analysis and conclusions may have for them.

5.4.2 – Observation

The second data collection method consisted of observations at DLT/crypto/digital asset conferences. As mentioned at the start of this chapter, these were in part chosen due to being settings where people similar to the interview respondents (i.e. active in the DLT space as entrepreneurs and/or investors) seemed to be gathering. Relevant events and potential other environments to conduct my observations were identified through the initial phase of desk-based research. As part of the initial investigation, I collected as many relevant journal articles as I could find from the three identified sectors. Going through these to build an understanding of the 'face value' view of DLTs I also made notes of any organisations mentioned as being on the forefront, from start-ups to established software and finance corporations. I then proceeded to find their online presences to approach them for interviews but also to see what they post as being the latest developments and important events for the sector. The first upcoming event in the UK that many of them were planning to attend was CryptoCompare Digital Asset Summit (CCDAS) 2020 which I decided to attend as well. This event would serve multiple purposes – to be observed for insights into the workings and 'air' of the DLT community, to learn about the DLT space and new upcoming projects, and to recruit respondents for my research.

Several similar events were planned throughout the year, but CCDAS was the last one to be held before lockdowns started to be rolled out (some attendees were joking about abstaining from handshakes being on the extreme side of precaution). All subsequent events I had planned to attend were cancelled.

A common problem for conducting ethnographic research is access to data (Atkinson and Hammersley 2007: 41). This is often due to gatekeeping at various levels and stages of gaining physical access to a field/location but also social barriers with a lack of interest in 'opening up'. Similarly to issues with interviewing elites (discussed above), participants of certain positions may be sceptical or suspicious of an 'external' observer. In contrast, conducting observations in an environment like an industry conference overcomes many of these barriers due to the inherent openness and even inviting atmosphere as almost all in attendance are hoping to present their offering, represent their company, and exude confidence and brilliance. Depending on research topic, this preparedness and decidedly staged behaviour could be an issue. For example, if an observation is meant to break through façades and reveal a 'natural' state of being among participants it would not be desirable for all observed to be in this presenting state. However, beyond the argument as to the possible extent of observing anyone in a neutral or natural state, the way DLT is presented within the space *is* what I was hoping to observe at these conferences. The type of data desirable for analysis *is* the way actors in the space *wish to be seen*, as it can speak to particular trends and general assumptions about the space and the wider ecosystem it belongs to.

5.4.2.1 – Observation experience

CCDAS took place in the warehouse-like dedicated events venue Magazine, just across the Thames from Canary Wharf, with London's banking skyscrapers in full aspirational view. At the entrance, hundreds of people were making their way in, most in formal wear, but some in typical tech entrepreneur attire such as jeans and hoodies or t-shirts. The majority of attendees appeared to be men and a much less balanced demographic than the roster of presenters both in terms of gender and ethnic minority/international representation. Inside, the venue was separated into three

sections. The first area was a convention floor, with 20-30 company stalls vying for attention. To one side, through double doors, was a big stage area with dozens of round tables placed in front of it for the main presentations and panel discussions of the conference. To the other side of the convention floor was a staircase leading up to a second smaller stage. A third even smaller stage was present in a corner of the convention floor, but equipped with headphones on each of the 20 chairs in front of it not to disrupt the stalls too much.

What in the event description was framed as an opportunity for collaboration, information exchange, learning, and witnessing cutting edge technology was quickly revealed to be more like a sales meeting. All of the stall representatives, most presenters, and even some guest 'influencers' focused what they were saying on the product that the company they represented was offering. Overwhelmingly, the convention floor stalls were made up of small companies and start-ups, whereas invited speakers tended to be from large and/or influential organisations. Panel discussions turned out to be less debate and more general agreement about the brilliance of the DLT space and bright future of digital assets, with panellists taking turns emphasising what they each added to the mix. This did not appear to be a space for learning but for networking and striking deals.

There was, however, an evident secondary purpose of the event: to assuage fears of a market contraction and to calm down a year-on-year increasing agitation towards the still lacking 'institutional money', expected to be invested into the space. Some representatives from traditional banking were present on a couple of panels and did give reasons for concern that limit the 'institutional' interest in digital assets and DeFi, but these were generally drowned out by the vast majority of optimistic voices and panels usually concluded on a 'positive' note. Overall, even the 'edgier' presenters agreed on the fundamental principles and promises of the technology and associated markets and so this part of the event served the purpose of reaffirming the DLT space's value structure. Being at CCDAS felt very much like entering an exclusive club with its own definitions of what behaviour would have counted as odd. This includes asking to speak to stall

representatives and presenters alike as a researcher. Some were ostensibly interested and gave me a few minutes, but my impression was that the enthusiasm drained from their eyes when it became clear that I not only was not a prospective buyer, I was also not developing an exciting new product they could use/sell, or even offering an opportunity for collaboration/exchange in an economic sense.

Vastly, only one viewpoint was represented at the conference as a whole, and the language was often close to verbatim from published material on the topic of DLTs, digital assets, cryptocurrencies and financial markets but perhaps even more focused on value. This included that most topics discussed at the various presentations/panels were in the realm of how to attract more investment or where/what the next derivative form will be. This meant that the data I could gather in a situation like this saturated with haste. It was not only a series of repetitions at the event, the event itself was a repetition of what I had seen in publications online, (sometimes by the same people attending).

Despite the additional conferences and events I had planned to attend were cancelled, I was able to virtually attend three other conferences the following year (February – June 2021). I took field notes throughout the conferences. At CCDAS, this consisted of summaries of discussed points in real-time at presentations and panels as well as thoughts on what I was learning. These took the form of loose references to other themes I had been reading about as well as first-impression analysis of what was being said within the context it was said. I wrote my thoughts and observations using the notes app on my mobile phone. For the online conferences I took a similar approach but typed into a Word document in real-time utilising dual monitors. Where a comment section was available, I also kept an eye on what other viewers were saying and any questions that were raised. These notes were then typed up and collated for analysis. I took care to note down quotes verbatim, and where possible, revisited recordings of presentations to ensure that the quotes were correct.

To a lesser extent, the observation data also included posts and comments in the Facebook groups I joined to recruit interview respondents. In particular, this informed my discussions on the role of

community (or the appearance of community) in the literature review and analysis chapters (Chapters 2-4 and Chapters 6-9 respectively). Although the focus of this thesis is on the founders, drivers and funders of DLT ventures, the Facebook groups provided a window into what the communication looks like between members of the 'general' (global and generic) DLT community (as opposed to supporters of a particular project).

5.4.3 – Literature analysis

As touched upon in the discussion on sampling above, the theoretical sampling strategy had its starting point in academic publications on DLTs which led to names of organisations and projects that could be worth exploring. In addition to these organisations, I also searched for DLT related publications from influential organisations in the finance sector. Aside from academic literature (which was discussed in Chapter 2) most published material tended to be from organisations wanting to promote particular products or from exchanges and investment schemes focused on cryptocurrency trading. One exception to this was material coming out of companies providing services, advice, and education for other companies and who were publishing articles that could help explain and explore the technology for (primarily) the finance sector. Among these, the 'Big four' accounting firms (Deloitte, KPMG, Ernst & Young and PwC) stood out as particularly prolific and influential, with their papers being referenced by others across the internet.

Due to the wide range of themes covered by their publications and the firms' influential position in the global economy, I decided to pursue the 'Big four' accounting firms further. That these are four similar organisations also had the benefit of providing an opportunity for comparison between their different perspectives.

The publications chosen were taken from the organisations' own 'news' or 'insights' sections of their websites and most often took the form of article pages in a separate area dedicated to new technology (sometimes dedicated to Blockchain alone), but some sources were published in blog form. As suggested by Hammersley and Atkinson (2007: 122-123), documents, real or virtual, are

good sources for understanding the setting and context of what is being studied as well as stimulate analytic ideas. For this to be as fruitful as possible, textual sources that inform a general understanding in this way should be wide ranging and both formal and informal. Hammersley and Atkinson further highlight that it can be difficult to surmise in advance what sources will be useful and not and that it is also important to continue reading and re-reading document sources throughout the research. This approach was employed for the research of this thesis, where the document portion of the data helps to spotlight how DLTs fit with the wider sectors they are mainly utilised in. The publications analysed have helped to demonstrate the language used by organisations that are generally influential in their area but who also want to appeal to those who are in the midst of working with new technology such as DLTs and how they frame their interest strategically. The texts also supported early conceptualisation of the archetypes.

As these publications were exclusively digital, there are some differences to printed written sources. This includes the physical context in which you may otherwise find documents for text analysis and potentially interactions in person with people who either keep or produced said documents (Hammersley and Atkinson 2007: 138).

5.5 – Analytical approach

The overall approach to analysis was holistic, and the first phase largely followed a process Yin (1989: 113-115) calls 'explanation-building', a form of 'pattern-matching'. This approach can be applied through making initial theoretical statements about expected outcomes of data collection; revise the statement multiple times as data either confirms or counters the statement; and finally comparing the revised statements against other cases/data sources from different contexts. Analysing both within and between cases/data sources can provide a richer foundation for the final explanation. Using multiple sources also enables the choosing of meaningful contrasts for comparison, while remaining open to contextual insights that differ from the theoretical focus at the outset (Bryman 2004: 53-55). I applied this approach in the first phase of analysis. For this purpose, the theoretical sampling strategy was employed to find data sources that could provide an

understanding of recurring themes and ideas and which seemed to be oriented towards or relating to topics that were relevant to my research questions. This process and the choices I made to delimit the scope and size of sample is outlined in Chapter 5.2 above. The analysis portion of this phase consisted of investigating the grey literature and academic material published from actors in and around the DLT space that the initial desk-based research had yielded. This together with theoretical assumptions formed a baseline understanding of what themes and ideas to expect from the DLT space in general, as a springboard for further levels of analysis to follow. In later phases of analysis, after having conducted the observations and interviews, a revisiting of 'explanation building' and 'pattern matching' was utilised to interrogate how well these sources matched the assumptions that emerged from the initial stages of desk-based research and literature analysis.

To produce the initial expectations and to inform the final shape of my research questions, first level coding of recurring word choices, arguments and themes were highlighted throughout the literary sources. Following this, academic literature was summarised within their identified sectors, as outlined in Chapter 2.1, while the grey literature from the Big Four was divided by apparent thematic divisions of arguments for different use cases, experiences and expectations the firms presented about DLTs.

Phase two of analysis then involved categorising the primary source data to understand similarities and differences to the expected themes, ideas and accounts. This process is described in detail here below, but it is worth noting that this material yielded a larger number of categories and richer descriptions than was derived from the literature analysis in phase one, no doubt in part due to the informality of conversation and oftentimes person-oriented questions asked, in contrast to formal and business/discipline related published material. However, the design of the set of questions and topics to raise with respondents stemmed from and built upon the understandings gained in phase one and from the observation conducted at CCDAS 2020 (which was the only observation to take place ahead of interviews).

All interview transcripts and observation notes were thoroughly scrutinised several times, and interesting quotes and word choices were highlighted in the documents. These were then coded into different categories depending on what topic they concerned and what aspects of the research questions they spoke to. Through this coding, seven different recurring categories emerged as representative of the different types of statements by the respondents. These were as follows:

1. Assumptions of technological neutrality; anti-humanism; and preference for perceived non-human trust.
2. Pro-market/anti-government sentiments; neo-classical economic understanding of money[29].
3. Importance of 'community'.
4. Democracy; democratisation; decentralisation.
5. Perceived benefits of DLTs for non-elites in society.
6. Views on external regulation of DLTs; and accountability in DLT systems.
7. Ideas about technological development as inevitable; and that the general public and/or government needs to be educated on new technology.

All gathered quotes were then collated based on these categorisations and collected in separate documents to be seen together with other similar statements.

This allowed for the third phase of analysis, which focused on the themes themselves and the narrative of what was said. However, the seven categories overlap and having one chapter for each category would not be feasible within this thesis. Instead, the statements were considered not only for what they represented at face value, but also in relation to what types of values and narratives that they align with and may be informed by. Linking back overarching themes identified in the literature review, particularly in relation to ideas about value and money (Chapter 4) and the role of speculation (Chapter 3) in the platform economy (Chapter 2), these seven categories were then synthesised into three overarching emerging themes – Trust, Democracy, and Humanism. Although

[29] This was the *only* theory of money mentioned by respondents.

the seven categories overlap into all three themes, they can roughly be organised to correspond to the three themes as follows:

Trust: categories 2, 3 and 6

Democracy: categories 2, 4 and 5,

Humanism: categories 1 and 7.

Furthermore, the statements and analytical conclusions were compared to each other and between all data sources in a fourth stage of analysis to test whether different respondents/actors were reflecting different approaches to DLTs and cryptocurrency. When analysing similarities and differences in how actors related to the three themes, four distinct approaches (and associated imaginaries) were identified, which resulted in a first iteration of a typology of actors. This was informed by common differences in how respondents approached the interview questions, but also from considering the insights gained from observations at the conferences as well as the desk-based research and literature analysis. I have identified four archetypes, which will be mentioned at relevant points throughout Chapters 7-9 and in the concluding Chapter 10. I have chosen to call the archetypes 'the crypto-idealist'; 'the crypto-intermediary'; 'the crypto-speculator'; and 'the crypto-developer'[30].

5.6 – Ethical considerations

Steps were taken to ensure that individual accounts could not be linked to specific organisations. These steps included the aforementioned anonymising of any service, product or organisation involved or mentioned. The act of anonymisation also involved careful consideration of any details that could be used to identify respondents and their organisations, while retaining the quality of data (Saunders 2015). Because of this, all statements used as quotes in the research were thoroughly vetted for any identifiable information. This included both primary identifiable

[30] A summary of these different types of actors and their associated traits and behaviour can be found in the introduction to the Findings and Analysis chapters (pages 132-134).

information as well as secondary (i.e. anything that in combination with anything else that had been quoted or which indicated a very unique product/feature could be used to derive the source).

All research was carried out in line with the University of Leeds ethical guidelines. As part of this process, an initial assessment was carried out to determine the level of ethical review that would be needed. Due to this research not involving any groups of people that would be considered vulnerable, and that no gatekeepers or barriers to access existed, it was decided that a 'light-touch' ethical review would be sufficient. All the relevant documentation was obtained and submitted with precise descriptions of how data would be collected, stored and used, which included producing a Participant Information Sheet to be distributed to all respondents (see appendix 5), and which in addition to a brief overview of the project also explained these ethical considerations. Ethical approval for data collection for the duration of the project was granted on 14 November 2019 by the Business, Environment and Social Sciences joint Faculty Research Ethics Committee (AREA FREC) at the University of Leeds.

Findings and analysis

Building on the theoretical framing outlined in Chapters 2.2-4 and the additional academic literature insights summarised in Chapter 2.1, the following four chapters of findings and analysis will begin with a text analysis chapter (Chapter 6) with data comprising grey literature from the 'Big Four' accounting firms. This will address the research question of which actors and sectors are most involved with the technology (RQ1), but also provide a baseline of what the finance industry says about the technology 'on their own terms'. The following three chapters constitute the principal conceptual analysis and primarily use examples from interviews with respondents and observations at conferences to discuss the relationship between DLTs and the three overarching themes of Trust (Chapter 7), Democracy (Chapter 8), and Humanism (Chapter 9). These chapters will bring the final pieces together to answer the research questions that have guided this project. The overarching question of what imaginaries that are shaping developments in the DLT space has been partly explored in the literature review, but will be further explained throughout these analytical chapters. I will in addition to imaginaries about money, value and economies explore assumptions, imaginaries and narratives that inform claims about DLTs' ability to provide trustlessness and democratisation as well as how the technology relates to ideas about humans themselves.

This part of the thesis will also complete the answer to the second research question of who are driving the implementation of DLTs and how the technology is presented. This was also partially answered in the literature review by considering the academic literature categorised by the three sectors Finance, Energy and Law (Chapter 2). In this part of the thesis, I will add to this by reflecting on what type of actor is involved within these sectors and how they view the technology, to also provide a typology consisting of four archetypes. This will be tied into discussions that relate to the third research question, about what claims are actually made about DLTs being able to aid in the betterment of society. The fourth research question of how claims and the structure and operation of DLTs can be understood from a sociological perspective has been discussed throughout the thesis, but will be summarised in the concluding Chapter 10. In this final chapter I will also discuss what

benefits may come from using DLTs, which differs somewhat from most of the statements from respondents and published material.

The four archetypes and examples of them from the data will be explored and expanded in Chapters 7-9, but below is a short summary of these different types of actors involved in driving the DLT space and their associated traits and tendencies. The attitudes that correspond to these four archetypes are highlighted in relation to quotes from respondents and blended in with analysis of how they relate to my theoretical perspectives. They are intended as embodiments of particular perspectives, rather than representative of demographic categories.

1. 'The crypto-idealist' – Often of libertarian leanings, but occasionally of different ideological background. The crypto-idealist presents themselves as driven by the core philosophy of economic and social freedom particularly associated with early Bitcoin development. Regardless of whether their actions are in accordance with their stated goals and ideals or not, they focus on promoting the narrative of DLTs as a force for sound money, democratic finance and tamper-proof ledgers and they celebrate any increase in interest from the wider society.

2. 'The crypto-intermediary' – Can come from a variety of organisations and ideological backgrounds. They often adopt the language of the crypto-idealist, but will in practice take the role of the intermediary that crypto-idealists are keen to get rid of. They typically utilise DLTs as a selling point in their provision of exchange or services platforms. Their focus is often on increasing efficiency of present processes within their organisation, or to launch new start-ups, but will usually utilise permissioned blockchains and/or models of verification other than proof-of-work (these technical differences were explained in subchapter 1.3).

3. 'The crypto-speculator' – Is usually from the finance sector or has experience with tech start-up business models. They are usually mostly interested in turning a profit on their investment in particular cryptocurrencies as assets, or on entire companies, exchanges or markets. Like the crypto-

intermediary, they use the same language as the crypto-idealist but will usually not be interested in offering any services, they are there to invest and later sell for profit.

4. ‘The crypto-developer’ – Is usually a software engineer or programmer that unlike the other three archetypes have a closer understanding of the technical side of DLTs. They may use this knowledge in pursuits as intermediaries or speculators, but they may also ‘reveal’ that the ideals of DLTs and cryptocurrencies tend to be oversold, compared to what the technology actually does. They tend to see benefits to increased use of DLTs, but more muted than what is used in the sales-pitches from businesses, and their support for DLTs can stem from ideological convictions, economic interests or even a naïveté in *trusting* that it will be used without exploitative motives by others.

Chapter 6 – Industry strategies and opinions about DLTs as represented by the 'Big Four' accounting firms

This chapter will provide an outline and analysis of opinions and insights on DLTs as discussed by influential the influential 'Big Four', and which sectors they believe the technology could be useful for. It helps us to answer the research questions about what sectors are most interested and actively involved in the implementation of DLTs (RQ1), how the technology is conceptualised (RQ2) and what claims are made about the betterment of society within these sectors (RQ3). The purpose of this chapter is to explore and clarify the promises and thoughts on DLTs on the terms of those who support and promote the technology. The chapter analyses grey literature produced by the 'Big Four' accounting firms, discussing their role as intermediaries and assessing their relationship with the ideological promises of DLTs against their interests as influential players in the traditional financial markets. The material consists of reports and other insight/recommendation pieces that represent the firms' stances on this technology. My analysis is organised into subchapters focused respectively on: an overview of industry interest in DLTs; how attitudes to DLTs among the Big Four have changed over time (in tandem with growing market and societal acceptance); their recommendations to clients seeking to navigate the DLT space; a shared suggestion of using DLTs for collaboration across industries and how this relates to their existing roles as intermediaries; and finally an assessment of how the Big Four are mobilising the hype around DLTs to their advantage and how their views differ from the general (libertarian-leaning) narrative.

6.1 – Industry interest in DLTs

The biggest interest in DLTs from within the traditional financial system is coming from the professional services sector. This sector is largely dominated by the 'Big Four' accounting firms that conduct audits and financial services for most of the world's largest companies.

As focus among blockchain projects in general is to disrupt and challenge the traditional financial system it is important to consider how these large stakeholders in the traditional way of doing things view the technology and the claims that are made within the DLT communities.

The Big Four consists of PricewaterhouseCoopers (PwC), Ernst & Young, KPMG and Deloitte. They are currently (and have been for decades) the dominating parties in the global financial and professional services sector and offer services such as audit, assurance, taxation, management consulting, actuarial, corporate finance, and legal services to their clients. They therefore represent a large part of what blockchain is meant to replace.

These accounting firms have kept a close eye on blockchain developments, especially from 2018 (following the bitcoin valuation boom of 2017) and onwards. As blockchain and cryptocurrencies have promised to disrupt the financial industry it is not surprising that these large financial institutions would want to assess any threats, as well as prepare for possible opportunities. Whereas the focus among start-ups and within cryptocurrency communities has been on decentralisation and distribution, these accounting firms direct their attention to how blockchain technology can be used to accelerate efficiency within companies or used for collaboration across industries.

6.2 – Attitudes toward blockchain technology

Reports from 2019 were still somewhat apprehensive, urging companies and organisations to learn more about 'the blockchain' and prepare themselves for this *potentially* useful and 'disruptive' technology (KPMG 2019). But by 2020, the tone appeared to have changed with blockchain presented as something that is already 'here to stay', that *is* disrupting all of finance and beyond, and which companies in all sectors should start integrating into their business models, before the 'early adopter' opportunity passes. This attitude is expressed by Deloitte (2020), with respect to how companies are investing in blockchain: '…these are not mere words but hard-dollar strategic investments made by individuals and organizations that view the world through a strategic prism'. KPMG (2020) are similarly stating that blockchain is '…beyond the hype phase and [have] migrated these technologies into the adoption phase', stressing that early adopters will get advantages such as increased revenue and customer loyalty.

In the *2020 Global Blockchain Survey*, Deloitte (2020) suggests that blockchain is far past its 'proof-of-concept' stage and that it is now a matter for businesses and the public slowly to get behind the idea, following a conventional adoption curve model. Any scepticism or hesitation is framed in the same report as a lack of 'evolved thinking', and that '[b]usinesses – and eventually, customers and end users – learn to adapt to the latest technologies and solve the other issues that accompany assimilation of change, such as regulatory and use case priorities' (Deloitte 2020, unpaginated). Concerns about the technology are thus implied to be backwards or technophobic, and potential problems that would require crucial regulation can be addressed at a later stage, by *someone else*. This theme continues, with reference to 'regulatory hurdles', and that the full benefits provided by blockchain technology are unlikely to be fulfilled until 'the general population develops a greater understanding – and acceptance – of digital identity', because '… progress along the implementation continuum is not always detectable to the naked eye' (Deloitte 2020, unpaginated). Similarly, KPMG (2019) argues that governments that can figure out how to regulate effectively will be able to attract global investment and become 'frontrunners in a blockchain economy'. The aforementioned 'hurdles' and what the full potential might be is not clearly defined, but rather left up in the air as something with great promise, if only people would know better.

In turn, Deloitte celebrates blockchain as something that '…has evolved from a cryptocurrency payment platform to something bigger, game-changing, and truly disruptive' (Deloitte 2020, unpaginated). This rhetoric is particularly interesting when it is coming from a firm that represents the type of services in finance that DLTs are meant to replace. What becomes clear is that they are cheering the technology on as development on a continuum, but never truly define what elements that are going to be (or already are) implemented and adopted by the finance sector.

Deloitte (2020) draws on the concerns and insights of company executives from multiple countries across the world[31]. Among them, an increasing number of people believed that blockchain technology is over-hyped, but that they might lose competitive advantage if they do not adopt it. In the light of China launching their digital Yuan, a majority of the respondents of the Deloitte report see digital assets eventually replacing fiat currencies, but that these are likely to be permissioned and government controlled. It is in the interest of these accounting firms that they are seen to be part of this new technological development to not appear to be falling behind, but they simultaneously want to avoid giving too specific predictions. They are likely doing this for two main reasons, 1. To not be proven wrong in the future, and more importantly, 2. Because it is in their interest that the promises of the technology can be called upon as an abstract concept for whatever ends suits them in any given application. This is related to the speculative dimension of finance and the self-fulfilling prophecy dimension of interest from influential actors, which was discussed in Chapter 3.

6.3 – Recommendations on how to use blockchain technology

Much of early cryptocurrency community aims were to replace traditional financial services, which forces the finance industry to balance their interest in blockchain technology with attempts to distance themselves from the scandals of Bitcoin, such as its high energy consumption and price volatility (PwC 2020: p.19). All of the Big Four are therefore adopting the language of disruption but presenting blockchain as something that is best used to increase value across multiple industries by increasing efficiency and shortening reconciliation processes. In other words, that the disruption can be assimilated and integrated into existing business models and practices in order to gain competitive advantage in a new market opportunity. It is not seen as a disruption that threatens the entire system of finance and corporate governance, although this remains a perceived threat if the professional services firms fail to act in the light of the technology's continuing advancement.

[31] But primarily from Europe, North America, Australia and selected East Asian countries such as China, Taiwan, and Singapore.

PwC (2020, unpaginated) state that '[a]s organisations start to reimagine their futures, they have the opportunity to explore ways blockchain technology can drive growth'. Listed by sector that they predict will benefit the most, *provenance* is at the top, as it will aid in achieving better transparency in supply chains and to verify sources. They state that counterfeit, stolen or contaminated goods can be flagged immediately. Second on their list is *payments and financial instruments*, including CBDCs (Central Bank Digital Currency), stable coins, and traditional cryptocurrency trading. This is perceived as beneficial mainly due to the increased speed and ease of trading, as well as the selling of tokens and their use in blockchain systems. Third is *identity verification*, including personal identification as well as credentials and certificates, and fourth on the list is contracts and dispute resolution. They suggest that blockchain, through bringing together ledgers, contracts, and payments, can improve the flow of commercial agreements and flagging of any disputes. In the type of services and contracts that are mediated through these large professional services firms often span across the world and involve multiple parties in different countries and jurisdictions, many disputes cannot easily be resolved face to face. The hope is that blockchain could leave a trail of evidence that can be used to resolve some of these disputes. Ernst & Young mention that they are 'pro-actively evaluating many of the business ecosystems that can be enabled by blockchain…' (Ernst & Young 2019, unpaginated) and highlight that the areas that are getting the most interest from the market place are: securitisation, payments and settlements, intercompany settlement, smart contract testing[32], tokenization, syndicated loans (for which they will be 'using smart contracts to govern loan terms and conditions') and digital asset custody, including 'cryptocurrency custody product development and vendor selection' and 'guidance on accounting and tax treatment of cryptocurrency transactions'. This means that like financial institutions today may hold securities on behalf of customers and give advice on investment placement, they are expanding this service to include

[32] Interestingly, rather than claiming that smart contracts operate without supervision, which otherwise is the norm in blockchain rhetoric, Ernst & Young state that these systems need continuous testing to ensure that the smart contract code is accurate, secure and standardised. Incidentally, this gives them as an accounting firm some room to retain an intermediary role for those concerned about the security of the technology.

custodian services for cryptocurrencies (which of course have no physical form, but usually have a particular signature and password attached to them). The accounting and tax advice for cryptocurrency transactions are likely to include continuously updated registers of information on how different countries are taxing the selling of cryptocurrencies in exchange for their fiat currencies, and therefore be able to suggest which traditional currencies that would incur the lowest fees, a process that is similar to tax evasion.

KPMG (2019) lists that the main benefits of utilising blockchain solutions is for transparency, citing that the technology provides 'a single source of truth', reduces fraud and that it allows for faster processing and reduced transaction fees, which benefits customers.

Ernst & Young (2019b) further discuss the usefulness of blockchain for companies: 'after several years of trials and a few early failures, blockchain solutions are starting to bring companies tangible benefits through greater accuracy, transparency and speed'. They see them as being best applied when integrated into Enterprise Resource Planning (ERP) systems, such as accounting, project management, compliance and supply chain software. However, for this to happen blockchain must be 'industrialised and scalable'. They warn that most companies that think of blockchain as an overlay to existing systems would be missing some of the aspects that blockchain can bring. The recommended plan for ERP is to 'plug the blockchain into the ERP system and make use of the company's existing business logic, data and process controls'.

Much of the focus is on the value that can be added from using blockchains. KPMG (2019) estimate that the potential added value to the global economy 'will surpass $176 billion by 2025 and $3.1 trillion by 2030', whereas PwC (2020) estimate that blockchain technology has the potential to add $1.76 trillion by 2030[33], as well as 'enhance around 40 million jobs globally'. In an earlier report (PwC 2018) they also suggest that it is possible to imagine that 10%-20% of global economic infrastructure

[33] It is interesting how professional assessments of the value of the technology can differ by $1.34 trillion (over 40%).

will be running on blockchain-based systems by 2030. As they are both describing blockchain as something to be integrated to multiple industries and most companies, these estimates are speculative and it is unclear if this includes increases in company valuations or mostly concerns digital asset market valuations. Being a technology it would be similarly confusing to estimate how much value 'the internet' adds to the global economy. It has also not been assessed how much the initial set-up costs would be for these systems or what type and volume of investment that will be needed. Furthermore, if they imagine that these systems will be built on proof-of-work blockchains, they have also neglected to assess the environmental impact that running DLTs on this scale would have.

In addition to suggestions for companies, these firms have also started operating their own blockchain services. PwC (2020) states that it is one of the leading providers of smart contract assurance and that they are using blockchain to block payments in cases of disputes. PwC also operate a repository for credentials called Smart Credentials[34] (PwC 2019), while Ernst & Young have their EY OpsChain[35] that provides multiple services, including supply chain tracking, tokenisation, tax and compliance, smart contracts, privacy management, and integration between private and public networks (Ernst & Young 2020).

Ernst & Young have also worked together with Guardtime and Microsoft on blockchain solutions for the marine insurance industry 'to reduce risk and friction in global trade and thereby facilitate global economic growth' (Ernst & Young 2018). They mention that currently, a lot of business is done on paper, and with all the potential incidents that can happen on a shipping voyage, it is difficult to keep track[36]. Beyond marine insurance, Ernst & Young also recommend using blockchain technology

[34] https://www.pwc.co.uk/blockchain/smart-credentials.html
[35] https://www.ey.com/en_uk/blockchain-platforms/opschain-network-procurement
[36] It is not made clear in this report why this industry is still conducting much of their business on physical paper copies, nor why a computer system with e-signature capabilities would not suffice.

in other areas of insurance (Ernst & Young 2019d). Insurers are recommended to make use of mobile phone cameras and IoT (Internet-of-Things) data to make claims management easier[37].

As presented by the four firms, there is never any question of whether a blockchain solution is ever unnecessary or if there are any drawbacks to incorporating the technology into existing systems – the question is always 'how' it should be utilised, or 'what type of solution' that is right for which kind of business. It is treated as a self-evident improvement to current infrastructure. The focus on efficiency and transparency is of course present in the wider blockchain community as well, but what is missing is any reference to decentralisation, a theme that is otherwise central in discussions about blockchain. Two of the firms have chosen to make this evident as early as in the description of how the technology works. The most telling step away from the typical cryptocurrency rhetoric comes from KPMG (2019, unpaginated):

> 'Traditional financial systems operate with a centralized database, usually with a single point of authority. Blockchain technology, on the other hand, allows for a distributed database that holds a growing number of records. Instead of existing in one place, the ledger is continually updated and synchronized across multiple computers in a network. Therefore, any participant in the network **with the proper authorization** [emphasis added] can view the entire ledger – without relying on an intermediary or any one authority'.

This definition, where only particular approved users will be part of the network is also used by Ernst & Young (2019d, unpaginated) 'those with appropriate encryption rights (consumer, insurer, auditor or regulator) can access a copy of that ledger and verify past transaction without having to trust the participants in the original transaction.'

[37] This development is already underway in car insurance (but without blockchain solutions), where customers have the option to fit devices in their cars that track their driving, in exchange for cheaper premiums. If blockchain solutions become standard in the insurance industry, it may become the norm that customers have to agree to their data being constantly registered and permanently kept on the ledger in order to get insurance at all.

It is assumed that the type of blockchain that their customers will prefer to utilise is one where reading and writing access will be restricted in some way. Rather than opting for the decentralised, permissionless blockchain model of Bitcoin, it is only the permissioned variety that is being considered. Even when permissionless DLTs are discussed, it is not explained whether this includes launching or investing in cryptocurrencies as assets, on the side of how they operate their main business. For example, the respondents of PwC's 2018 report (PwC 2018) are leaning towards permissioned blockchains by 40%, followed by permissionless at 34% and 26% for hybrid models. As with the other reports, this does not differentiate between launching an alt-coin, which can of course be permissionless without issues for the company doing the ICO or selling already produced coins, and using blockchain technology for other, in-house or settlement purposes. This speaks to a preference for flexibility of a promised future that is concrete enough to sell as an idea, but vague enough to avoid being wrong when time reveals the true outcome.

KPMG (2020) also argue that it will be more beneficial if the Blockchain technology is paired with AI frameworks. It says that blockchain authenticates and authorises data models and outputs, 'as well as by ensuring content and data input authenticity', 'The idea is to ensure that decision making is supported by trusted data, and that models were never tampered with and were built without bad actors or poor decision inputs.' The focus here, as in much of blockchain hype, is on the claim that this type of system validates that whatever was put on should stay on. However, that does not mean that what was put on could not have been manipulated in advance. It is assumed that the model built for the AI is automatically neutral and pure, as long as a blockchain can keep it safe from tampering, but it is only concerned with what is already there, not how it got there or how it relates to the real-world objects that the data represents. Neither the AI models nor the blockchain is neutral, and neither can ensure that the data which was put in was correct nor that the process of data entry was free from error or coercion. They also suggest that keeping transparent data from IoT will help tackle climate change through monitoring carbon emissions and rising sea levels (KPMG 2020). This of course also depends on trusting that the data that is put in is correct, and it is not

made clear how transparency alone affects climate issues, without also setting tougher aims of reducing emissions.[38] As with previous assessments, the climate impact of running the blockchain systems themselves has not been considered.

Likewise, Ernst & Young (2018, unpaginated) argue that '[t]he ability of blockchain to create a digital record of a real-world objects [sic] lends itself to any sector where there is a supply chain of physical goods – from automotive to aircraft manufacturers to diamonds'. As with the climate data, they still have to trust the provider of the system, in this case Ernst & Young (with collaborators). Efficiency of keeping track may increase, but the trust in the intermediary system has not changed.[39]

Despite differing definitions of what type of blockchain technology should be used, the rest of the language remains in line with what we have seen in other areas of blockchain enthusiasm. For example, Deloitte (2020) argues that use cases are likely to be permissioned, while also contending that 'virtually everyone who supports those core operations becomes a stakeholder' and that '…it is also a story about how blockchain affects the entire organisation and makes everyone a participant in its success'.

This leads to a back and forth between discussing benefits and added value of *private* blockchains for corporations on the one hand, and mobilising the rhetoric of disruption and distribution across a network on the other. These are in actuality two very different things that used in tandem are not disrupting anything for any of these firms. The private blockchain use they propose for companies works as little more than an efficient ledger solution and data extractor to be integrated with existing infrastructure, whereas interest in distributed networks can be funnelled into

[38] Stating that transparency will help improve the situation also implies that companies today are cheating the system.

[39] With this trust situation, it is not impossible to imagine that insurance offered on these kinds of IoT/blockchain systems itself creates a market of reinsurance. For example, if Maersk agrees to use Ernst & Young's marine insurance blockchain interface between them and their insurer, Ernst & Young may on their end reinsure their blockchain contracts, or sign agreements with both parties that cover the service as a whole.

cryptocurrencies as a digital asset market, which on its own is little more than a poorly regulated asset class.

6.4 – Using blockchain technology for collaboration across industries

Aside from these company specific suggestions, all four firms argue that the full potential of blockchain technology cannot be utilised unless companies connect with each other. PwC (2020) argue that there is only little value in an organisation building a blockchain solution for internal use, and that they key is collaboration. This is needed for faster end-to-end agreements, which includes procurement processes, transactions and settlements. KPMG (2019) argue that the more standardised a process is, the better suited it is for smart contract solutions. They see the processes that would benefit most as being about payments such as acquire-to-retire, source-to-pay and quote-to-cash, moderate use for payroll and record-to-report, and low impact for plan-to-perform processes.

However, for this to be possible, the four firms are calling for standardisation, which may seem counterintuitive, considering the decentralising ethos of the wider blockchain community. Regardless of the differences between actual use and rhetoric, a hindrance to collaboration and standardisation seems to be lack of trust in other actors. Deloitte (2020) states that an issue so far has been that the consortia put together between companies, organisations and individuals have struggled to come to agreement on even baseline rules and regulations, as well as concerns that not all parties involved have put in equal effort and time as compared to perceived uneven profit distribution. This is especially interesting, considering that blockchain platforms are supposed to overcome these kinds of issues. This highlights the lack of agreement within the DLT communities and both within and across sectors for what these technologies are actually for. The only thing that is consistent from different sources on DLTs is that it is supposed to increase efficiency and thus cut costs. It is as if this promise of saving/making money is all that is needed for it to be worth pursuing and advocate for regardless of the fact that there is no agreement even on a fundamental level of why it works or why it is needed. This approach of almost calling for companies to streamline their

services and processes to *accommodate* blockchain demonstrates that it is not something that is easily applied to existing systems, it is something that is invoked to drive change for its own sake.

This sentiment is echoed by PwC in their 'Global Blockchain Survey 2018' (PwC 2018, unpaginated). The tension between the idea that blockchain is already disrupting the sector and actual issues with deficient collaboration can be seen as early as the start of the report. It begins by stating that 'Blockchain is here. What's your next move?', followed by '[d]istributed ledger technology and digital tokens are rewiring commerce, but lack of trust may stall progress.' This demonstrates that companies so far have been sceptical, and that this is a reason that blockchain uptake has not progressed as quickly as anticipated. Among their 600 executive respondents from 15 territories for this report 84% are actively involved with blockchain, but simultaneously 45% believe trust issues could delay adoption and 28% say interoperability of systems is key for success.

Also highlighting this issue, PwC (2018, unpaginated) suggest that the biggest gain lies in if multiple industry participants can come together and create a shared platform, but that 'when you start inviting third parties to engage, you can't write the rules yourself.' They see the lack of trust in others as a barrier for more widespread use of blockchain technology. Highlighting the crux of this, the report points out that '[i]t is perhaps ironic that a technology meant to bring consensus hits a stumbling block on the early need to design rules and standards'. They state that although blockchain is supposed to engender trust, companies actually confront many trust issues, including trust in the technology itself, particularly concerning reliability, speed, security and scalability as well as lack of interoperability and standardisation.

In trying to explain the lack of trust, PwC (2018) focus on the fact that blockchain is more abstract and technical than most new tech. In finance in particular, they state that companies currently follow the rules of the systems in place because they are standardised, but not necessarily would agree on what the best blockchain replacement would be. PwC address how to engender trust in blockchain, despite their caveat that it is 'ironic' that something that is supposed to engender trust

by itself has this problem. They suggest that it has to start small, rather than the usual hyperbolic statement that blockchain is a 'big-ticket solution to big problems'. Ernst and Young (2019e) also argue that companies using different chains gives rise to potential dispute over which version is the latest and contains the accurate information. They conclude that standardisation is the key, and compare it to how GSM standards from 2G mobile network onwards has resulted in it accounting for over 90% of global mobile market share.

Furthermore, in reference to a hackathon that Ernst & Young observed in 2019, they argue that financial services, central banks and regulators at this point in time are likely to want oversight and having central, public blockchains that supervised private and public blockchains synchronise with (Ernst & Young 2019e). However, they also state that it is unlikely that all parties would agree on a standard and that '[t]o do so would take considerable time and delay the critical innovation that is required.' This suggests that standardising properly risks ruining creativity. They argue that having open regulation will let parties contribute 'naturally' and that this eventually will lead to a single public blockchain.

In other words, this confusing position argues that standardisation would stifle a development that further down the line would come to the same conclusion anyway, but organically. Interestingly, this is contradicted within the same report, stating that currently 'each participant has its own infrastructure, maintained at significant cost, deployed to support processes that are often archaic. *If you were to design an investment banking ecosystem from scratch, it would bear little resemblance to what exists today* [emphasis added]' (Ernst & Young 2019e, unpaginated). This is in essence suggesting that the systems could be better designed with intent, but that it is better for business to let it go wherever it wants. With this in mind, interoperability instead becomes a tool to be used for competitive edge (framed in the report as 'leveraging interoperability').

These points all demonstrate a confused and muddled understanding of how DLTs are actually supposed to be disruptive. If they were evidently improving processes and services at an alarming

speed, why does it have to be sold so aggressively? If it was truly disrupting the sector in a way that it would be beneficial to all parties to abandon their traditional way of doing things, why do the globally dominating financial sector leaders promote it in such a vague way? What becomes evident from my analysis here is that it is precisely these kinds of reports that are causing blockchain to be disruptive. Rather than the technology forcing the world to accommodate it, its supporters (which at this point includes anyone that wants to make money from asset trading or cut costs in their business) are forcing the world to see it as disruptive. It is because of the increased interest from influential actors that DLTs are gaining traction, not the least because of the acknowledgement of interest from governments and firms like the Big Four. But more importantly, the hype is used as a vehicle for relaxation of regulation and reduction of state involvement. By appealing to the alleged robustness of the technology in terms of trust and transparency, they are hoping to take over some of the decision making on what is considered to be fair business practices. At the same time, they back away from bringing any suggestions or taking on roles of responsibility in setting those rules and instead refer to 'the need for standardisation'. They are trapped in a position where their calls for setting the markets free to produce balanced societal outcomes on their own are facing an increasingly evident realisation of how much the so-called free markets rely on government enforced standardisation, regulation and management of legal disputes.

6.5 – Hijacking the hype?

Beyond mentioning security/technical concerns and the additional concerns regarding trust and collaboration raised by their respondents, the four firms show little effort to assess the necessity or any drawbacks with blockchain. It is from the start presented as an inevitable future way of doing business. Issues are not to be dwelled upon, or even solve, but to circumvent or ignore. The problem of lack of trust between users that is holding up potential standardisation and interoperability is only raised but never resolved.

Instead of these concerns leading to calls for regulation and formal standardisation from institutions and government, they advise against too prescriptive regulation. For example, Ernst & Young outline

some issues with blockchain adoption, stating that '[r]eduction in centralized infrastructure will make monitoring more costly and complex in the short term for insurers and financial markets' (Ernst & Young 2019d, unpaginated) but argue that prescriptive regulation is unlikely to be effective, as things are evolving too fast. They are instead calling for flexible prudential regulation (which only accounts for how much risk companies can take and how much capital they need to keep in reserve). They also mention issues with changing data protection regulation, especially in Europe, as this affects how they can share, update and reuse information they have on record, if users will be able to withdraw consent. Despite calls for standardisation, actual regulation is presented as a pain that will make business difficult.

The actual driving force behind their interest in blockchain is perhaps best expressed by PwC '[e]veryone is talking about blockchain, and no one wants to be left behind' (PwC 2018, unpaginated). Because of this, they advise businesses to adopt one of four strategies: 1. To integrate blockchain technology into their existing systems; 2. To build towards an industry-wide ecosystem; 3. To work towards setting standards deliberately, rather than waiting for standards to appear; 4. To remain flexible, as regulation still is uncertain. All four options are thus geared towards absorbing blockchain technology, rather than challenging any status quo – it is about adapting in order to retain influential positions, regardless of what they actually think about the use value of the technology.

In their 2020 report called 'Time for Trust', PwC (2020, unpaginated) further expand on this view of blockchain as something necessary for keeping business going as usual. The report mentions that even before the onset of COVID-19 over half of their respondents believed that 'faltering trust in business was a threat to their organisation' and that 61% of their respondents are prioritising digital transformation, suggesting that blockchain could help with trust and transparency issues. This makes

the integration of blockchain technology similar to greenwashing[40], acting as a signal to investors and customers that they have new reasons to trust them, while little actually changes. As with greenwashing, there is also the possibility that the technology only will be emphasised as long as it gives the image of being with the times.

Ernst & Young's Global Blockchain Leader, Paul Brody, states that '[t]he future of doing business will be through tokens and smart contracts, enabled by blockchain. EY has a clear vision and strategy for how blockchain is digitalizing and integrating supply chains by knitting together business operations and finance at the ecosystem level' (Ernst & Young 2019a, unpaginated). In their work together with Guardtime and Microsoft on marine insurance, they reiterate the need for cooperation in a field with so many stakeholders. Because the same collaboration could be done with a different solution, they are using the idea of blockchain as a focal point for collaboration in order to get a competitive edge.

Following this analysis of how the Big Four see blockchain and approach this technology, their views share some common themes and characteristics and make up a particular contradictory stance on DLTs. This includes various iterations of the following series of statements: good blockchain use requires interoperability, interoperability requires standardisation, standardisation requires oversight, and oversight requires regulation and/or third parties, *but* this needs to happen without regulation or designated third party solutions, because otherwise there will not be enough business opportunities for them. A second position shared among the four, which is also contradictory, is the declaration that blockchain is already here, so you better get on board, while simultaneously giving the caveat that because people are unwilling to get on board, it is not going ahead as quickly as they hoped.

[40] A term for using the language of being environmentally conscious as part of the appeal of a company, while providing very little actual effort to be environmentally friendly/sustainable and/or abandoning any commitments as soon as they are not useful for publicity purposes anymore (Jankovic and Bowman 2014).

6.6 – Conclusion

Not surprisingly, the accounting firms appear to be interested in absorbing the hype for blockchain and using it to secure their places in providing important advice, services and infrastructure. For them, stressing the necessity of connecting companies across industries as the best use of blockchain technology gives them an opening in a development that from other perspectives is trying to get rid of firms like them.

Throughout these reports there is a tension between the perceived benefits of blockchain technology allowing for cutting out the middleman, a rhetoric that fits within the wider blockchain space ethos, and calls for standardisation and establishing a common integration approach which inevitably will centralise particular types of the technology so that companies can achieve the smooth transactions and contract settlement that they want to retain from their current positions. For example, PwC (2020) state within the space of two paragraphs that cutting out intermediaries will help save costs and increase efficiency, while also urging companies to align themselves with a particular blockchain enterprise (such as Ethereum, R3, Hedera, Ripple, MultiChain or Hyperledger) as organisations will compete to become the most widely used solutions and platforms.

If we take into consideration that these accounting firms are increasingly offering their own blockchain solutions and encouraging standardisation, they are positioning themselves as trusted providers of blockchain services, aimed to get companies on board *their* preferred use and form of this technology. They have adopted the hype rhetoric and stress the urgency of getting ready for the next step along the perceived, or contrived, evolution of digital communication, commerce and infrastructure, while shoehorning themselves in as a stable and trustworthy *intermediary* and guide through this field.

In other words, most of the benefits of blockchain that these firms suggest could also be achieved with regulations and standards. If transparency was the norm in the traditional systems, there would always be clear access and reasons to trust data. Integrating systems across platforms could be done

anytime, but it is in their interest to suggest that it could only be done with this technology. On paper, it offers something that was not possible before: to trust technology rather than people. Despite this ostensible goal, they still want to be in control of their own internal blockchain-enhanced processes and systems. This means that every company easily can choose not to add certain data to the blockchain as well as limit who has writing or even reading rights on some or all layers of the blockchain system.

In addition to still having to trust that companies are using their blockchain systems with honesty, these accounts do not consider that having access to the programming always means that things can be reversed, smart contracts nullified, etc. The same trust has to remain, regardless of the technology. In the case of in-house blockchains, this is very evident, but is also the case for distributed and decentralised systems, as development has to be applied somewhere. In theory, all nodes in a decentralised system have to update their program to reflect what developers consider to be the latest version. A majority system can of course cause a fork (a splitting of the chain between different interpretations), but in practice, majority coin holders often wield enough power to be able to decide which version stays.

For a company to have a decentralised system therefore runs the risk of being ousted by their own nodes, if the opposition is allowed to grow big enough. This contradictory position, where the trust between people remains central, regardless of the technology that is supposed to change this situation highlights how all networks rely on interpersonal trust on all levels. Human interaction is messy, and multifaceted trust mechanisms that are fragile and bound to their situations will always make these relationships much more complicated than something that could be replaced by a ledger based on transparency and being tamperproof. This is something that these firms are either not recognising or purposely ignoring, as any indication that markets cannot be free from humans would undermine the promise of both the philosophy of market economics as well as DLTs.

For this reason, it is not surprising that these four firms are not arguing for increased regulation towards these goals, as this would restrict the finance industry as it is. This dilemma follows already established patterns of authoritarian neoliberalism (Bruff 2014) as well as how tech platforms are already using technological innovations to circumvent regulations and push for deregulation of their respective markets, which was discussed in Chapter 2.

Ernst & Young's Global Vice Chair – Industry, Shaun Crawford, expressed these views in relation to their marine insurance project:

> 'If we only worked with insurance companies and brokers, nothing would have happened… But for a shipping company that spends hundreds of millions on insurance each year, a blockchain solution offers the opportunity for tighter premiums and better claims processes. There's a much clearer value for them. We're going to the end client to transform an entire industry process… Introducing a hugely disruptive technology to any long-established industry with existing databases and relationships will inevitably be challenging. This is why collaborations with Maersk, who are actively looking to drive innovation and identify digital transformation opportunities in their industry, proved so crucial in bringing the platform to fruition… We're *disturbing the status quo* [emphasis added] culturally and all the existing processes that make up that culture… Why would the industry want to change and be the first movers? The industry won't move unless you bring the client to the table.' (Ernst & Young 2019d, unpaginated).

This demonstrates that they have to convince businesses that these are good solutions, rather than the companies seeing the value and approaching them. It also shows that despite the language in their reports on the 'arrival of blockchain' they are actually pushing it as a business opportunity for themselves. In this case, Ernst & Young and collaborators will be the writers and custodians of the contracts, effectively securing their space as the middleman. By making their assessments of blockchain vague, and portraying dangers in choosing the 'wrong blockchain solutions' they are ensuring that companies look to them, thus keeping their own industry intact. They are placing

themselves on the side of the disruptor while retaining the status quo, by hijacking the enthusiasm of the wider blockchain community.

Considering the recurring theme of apprehension around the lack of trust, and ‘hurdles’ in the way of quick adoption, it is worth contemplating whether a shift towards blockchain within finance would have happened at all without them making this move.

Chapter 7 – Trust

Trust has inevitably been a central theme throughout this thesis. It is through the trust in social networks that value exists, it is through the trust in the speculative promise of a new market that investments are made, and it is through the trust in the narrative of why DLTs provide technological solutions that DLTs continue to spread and see increased adoption. Drawing on my ethnographic data, this chapter will outline the different types of trust that are simultaneously at play in the development and sustaining of DLTs. This is organised into four subchapters, the first of which discusses statements around cryptocurrencies being 'better money' due to the alleged removal of interpersonal trust. The second demonstrates an extension of this argument in which DLTs rest on trust in the neutrality of technology. The third subchapter discusses concerns around public trust in DLTs, and the final subchapter considers DLTs as an attempted (but lacking) answer to a changing (reduced) trust in the social contract. The chapter as a whole will help us answer elements of all four research questions by identifying active imaginaries and narratives (RQ1), what actors are involved (RQ2), how alternatives to trust are seen as better for society (RQ3) and what this means for the overall structure and operation of a DLT, from a sociological perspective (RQ4). I will also at relevant points use examples from respondents to demonstrate characteristics of the four archetypes and how they differ from each other in their relationship to trust.

7.1 – Cryptocurrencies as 'better money'

One of the fundamental claims around cryptocurrency is that it is better suited as money than fiat currency because it is tamper-proof, limited in supply and that issuing of new coins is decentralised. This reflects the neoclassical economic perspective of money and is fundamentally about economic trust mechanisms in society. These perspectives were discussed extensively in Chapter 4, were I concluded that the general understanding of money in society is closely aligned with these neoclassical economic perspectives, even when they are not applied in practice. These perspectives were generally also shared by respondents, who gave a wide range of examples, but which all reflect these fundamental opinions on monetary policy. For example, one respondent stated,

> 'I'm a very strong supporter of Austrian economics [sic], who believes in hard currency, and I don't think that the governments should be in control of the money.' (CTO, blockchain energy company 2, 2020)

A second respondent further argued that,

> 'the reason why blockchain technology emerged in the first place was because centralised decision makers were… were flooding… *flooding* the market with free money through quantitative easing…as a result of banks…not doing their jobs well enough. And that's why we get the solution of "let's decentralise the networks so that no centralised authority can ruin everyone else's money by printing it" and if you… if you fuck up as an organisation on a blockchain that's it, it's your fault.' (CEO, blockchain energy company 1, 2020)

These perspectives were quite common and reflect the libertarian idealism that bolstered early supporters, especially associated with 'proof-of-work' cryptocurrencies like Bitcoin. However, depending on the purpose of cryptocurrency according to each respondent, different properties of money were highlighted. To respondents that represent companies that have a profit interest in the issuing of new tokens, mediation of cryptocurrency trading or that privately invest in crypto, store of value is highlighted as the most important feature.

For example,

> '... I think the current crisis [Covid-19] is further stressing how much we need sound money, right? Because, when you have federal banks, central banks, you know, printing money non-stop with no cap in supply, what happens is the currency actually is debased, over years… if you look at the properties of money, right, by its pure definition, we know that it needs to be a store of value, we know that it needs to be a medium of exchange, right, and a unit of accounts. But the most important of all these properties is store of value… because most of your money shouldn't be spent, It should be *saved*… And that *really* exposes the flaw of fiat currency as of today

> because if the fiat, if the US Dollar loses 90% of its value in a hundred years, so maybe during your lifetime it would lose 60 or 70%, that's really bad… You want something that store- a real store of value, and Bitcoin is going to do that, just because the supply is capped at 20 million bitcoins. The government is using a system to stimulate the economy which in the short term is great. Like, printing money is not necessarily only a bad thing, but it's the *abundance* of printing that is a problem in the long term.' (Chief Partnership Officer, cryptocurrency exchange and asset management company, 2020)

To respondents that utilise cryptocurrencies as payment systems to enable trade across borders, the medium of exchange feature is held as most important. In this latter case, the value fluctuation does not matter, but to those who rely on the token itself to make profit, maturation of value is crucial. For those who mediate trading, the value itself only needs to fluctuate enough to ensure that it continues to be traded. In effect, this means that to all but those who utilise cryptocurrency as an international payment system, a cryptocurrency mainly acts as an asset. This difference allows us to divide users interested in the money side of DLTs into two distinct archetypes: 'the crypto-idealist' and 'the crypto-speculator'. An actor engaged with DLTs and cryptocurrencies can of course belong to both of these archetypes, but the difference lies in the statements. The crypto-idealist promotes the narratives and imaginaries of why DLTs are important and views for example Bitcoin as an anonymous and transparent payment system. The value of individual tokens does not matter as it is not to be used as an asset. To the crypto-speculator, value maturation is *the* most important factor. For example, to the respondent quoted above (who stressed how inflation is ruining the long-term value of the dollar) the main value of a cryptocurrency is as a store of value, which inadvertently or not means that the plan is to sell them at a later stage for Dollars.

However, regardless of these distinctions, all respondents viewed fiat currency as a bad form of money because the central control and 'printing of money' causes money to be worth less and less over time. Hard money, on the other hand, is seen as unavoidably increasing in value, something

that will reward those who save. In practice, however, like with housing markets, deflationary currencies will mostly benefit those who are already 'on the ladder', but make it more expensive for those who have not yet invested. For those without assets, this has the same effect on their living costs as inflation, while it protects those who are already wealthy. As cryptocurrencies are more akin to valuable assets, it makes them less useful as a medium of exchange, as it will always be more profitable to hold them. Many of those who espouse the values of the crypto-idealist are therefore using this narrative to further attract interest and investment in the hope that they will be able to increase the value (as compared to a fiat currency) of the crypto assets they hold, in other words the crypto-speculator side of them.

As discussed in Chapters 2-4, it matters what perspectives on money get represented, especially in markets that set out to replace traditional financial structures with 'fairer' blockchain solutions. The neoclassical economic view of money represents a particular logic and ideological way of thinking that assumes neutrality of markets and equilibrium between self-interested individual actors within them. Rather than passive beliefs, these views on why cryptocurrencies are 'sound money' steers financial markets and different monies as assets in directions that are anything but neutral.

By extension, this also applies to blockchain companies and solutions as investable entities themselves. Like other tech platforms they are most beneficial for those with so-called 'pioneer advantage'. Several respondents admitted that this is an important factor, but when questioned on the barriers of access to the space, whether it be technical knowledge or 'being in the loop', many referred to the adoption curve as an undisputed, unavoidable truth of how things evolve. Blockchain is presented as the next big thing, whatever people may do to try to stop it, and that it is always the tech people, followed by venture capital that are first to catch onto new trends. For example,

> '… It works like anything – you have the adoption curve, right? You have your, you know, your pioneers, innovator, early majority, late majority, and then laggards. So you're always gonna have people that seek out and find the latest technology and they become your first customers

> and they are always the first members of community and they become your evangelists and start talking about it and they help you build it'. (CEO, blockchain energy company 1, 2020)

or,

> '…it's like any new technology… nobody really paid any attention five years ago… [then] bankers started looking at it, and it became more public and more public. And then, with any new technology, you then get an excited hype of people seeing how they could use this technology. So you got all the "coins" or people trying to raise money for various things with coins, and then there was nothing but coins for a year or so – it was just manic. And then the more big companies start experimenting with it and talking about their experiments, and the more small start-ups and companies want to see how they could leverage this technology for themselves. And that happens with anything. [It] happened when the internet started, you had the Dotcom boom, and you know, it just happens with new technologies that come along.' (Software developer, blockchain badge and certificate solutions, 2020)

The same respondents also celebrated anything that draws more attention to cryptocurrencies and blockchains in general. Regardless of whether they disagree with the type of blockchains that are getting traction, it is seen as positive that the space is getting increased attention and investment, as this will benefit 'the transition'. This demonstrates that it is through disparate, but organised effort of promotion, as well as the mobilisation of capital that tech development and investment is pushed into this particular space, rather than an inevitable evolution.

Not only is it pushing a particular space into being, but acts to further privatise and fractionalise already existing markets. The platforms can end up becoming middlemen between existing middlemen.

Several respondents expressed that getting big investments, or even government contracts is the equivalent of a golden ticket. But, they also acknowledge that getting traditional financial players

involved can be a problem, as speculation on the tokens increases. One respondent expressed that speculation such as with derivatives and futures contracts provides opportunities to short cryptocurrencies and that this,

> 'gave them the chance to crash the entire market in 2018, you know play with the price so people freak out and end up capitulating. So, although I realise… [that] when derivatives, when contracts went for Bitcoin to go to the moon – Yes, more money will be traded, yes it could go up, but… traders do not care about the philosophy or ideology of Bitcoin.' (Chief Partnership Officer, cryptocurrency exchange and asset management company, 2020)

Another respondent demonstrated a similar sentiment, that among those who started getting into cryptocurrencies during the boom of 2017,

> '…most of those participants were more speculators. They wanted to get in, they wanted to trade, they wanted to make money, and they wanted to make *dollar* money. They didn't want to increase cryptocurrency use…' (COO, cryptocurrency accounting software company, 2020)

This contradiction is a key problem in the multifaceted narrative of cryptocurrencies, as investment is needed to increase the usage, price and value, but which also introduces market manipulation to a system that is supposedly free from it. The former respondent, however, who was apprehensive about the increased involvement of speculators, remained certain that even though the traditional financial players that are entering the space are only in it for the profit and speculation, they will eventually see the wider benefits and join the unspecified cause.

> 'I think that they will just like me, you know, start for intrinsic [sic] reasons, but as they go along, they go to more conferences, meet the people, the community, things will change. They will convert eventually.' (Chief Partnership Officer, cryptocurrency exchange and asset management company, 2020)

Although these self-contradicting statements can be associated with the crypto-idealist archetype, it is important to remember that many of the idealists also are looking to make profit and that they because of this motivation have a tendency to anyway agree with developments that go against stated ideals. Therefore, it is worth raising that this attitude also can be associated with a third archetype of actor in the DLT space, 'the crypto-developer'. The crypto-developer is often (but not necessarily) a developer, software engineer or programmer. This archetype represents those that are mostly interested in what the technology *is supposed to do* from a technical standpoint and they are usually more versed in what that actually entails. They are less keen on the narrative as a sales pitch, and more interested in proliferation of what they argue is a good piece of new tech. As an archetype, they could be viewed as sceptical of the crypto-speculators' intentions and are worried that they will 'ruin' the DLT space for others. It should be noted that the focus on the technical side of DLTs may lead the crypto-developer to end up following more predatory leaders that *seem* to want the same things in the space due to the narrative, but which actually are seeking to exploit DLTs as a new market.

Another often raised point was the importance of experimentation and not regulating the space too much, so that better solutions can come from trying them out (as was also raised by the Big Four discussed in Chapter 6). These opinions were often coupled with the belief in the productivity and natural balance of free markets. One respondent expressed that this is so important that even fraudulent projects should be allowed, as those who buy into it have themselves to blame.

> 'I believe that in our industry, especially in crypto, you should be allowed to try out experiments and if you have a project that has a token, and on the other end of that token there's a virus, I believe you should be able to sell that token, and the people on the other end should be able to buy it. I don't think that necessarily means that it's a good investment or worthwhile, but I definitely believe in free markets and people's ability to experiment and try things out.' (COO, cryptocurrency accounting software company, 2020)

Not all respondents shared this view, though, as one expressed that the reason venture capital markets are regulated is that it is complicated and that without the proper knowledge, an individual could hurt themselves financially.

> '…there is a reason why VCs [venture capital firms] hire technical specialists that evaluate the projects, there is a reason why VCs are regulated, and [that] they are responsible in front of their boards as well to justify investments. And that's because it's a hard market. It's not easy to find companies and as a person, you know, an individual, to evaluate if this makes sense or not, it's a bit like - anybody could try to go on to the stock exchange and just start playing with stocks. I mean, you *can*, and I can tell you that initially, it's really easy. And it sounds like you can change it to your full time job, but very quickly realise that it's beginner's luck. And then it's very nasty if you start losing money.' (Ecosystem Director, open source blockchain platform, 2020)

This viewpoint gives us an example of the fourth archetype, 'the crypto-intermediary'. Like the crypto-speculator, they are interested in utilising the narrative of DLTs to attract investment, but unlike them, the crypto-intermediary is more welcoming to regulation, government involvement and may use the technology mainly to streamline their existing organisation. This archetype most resembles the business models and aims of companies within the platform economy, and their similarities include their focus on data and transaction driven income streams, but also in the way that the investment they attract act as conduits of further interest in their sector and the DLT space. It is important to remember that although this relaxed attitude towards the original ideals associated with cryptocurrency and blockchain technology, they usually still rely on the narrative to explain why their use of DLTs is necessary and beneficial. The way this is done for all actors, regardless of archetype, involves stressing the neutrality of technology, which will be discussed next.

7.2 – Trust in the neutrality of technology

When blockchain technology is paired with the business models of platforms and ostensibly following the principles of neoclassical economic theory, removing the need to trust institutions as

well as other actors, acts as a stepping-stone towards deregulating markets. There is an incentive to present the technology as neutral and as providing 'trustlessness'.

The most straightforward explanation as to how this approach to trust works was given by the CEO of a blockchain energy company:

> 'Why trust it? Well, because it's maths… And I'd say it's immutable data that's verified in a decentralised way, whereby each actor is incentivised to tell the truth and act in good faith on the network… it's not even trust, because the fact is that the Bitcoin blockchain is a trust-*less* network. You don't have to trust it. That's really what it comes down to… people can trust it or not but it's going to be reliable, because it can't not be.' (CEO, blockchain energy company 1, 2020)

In this idealised understanding, the technology does not only allow for expansion of markets, but it removes the need for a centralised body to decide what is allowed at all, as this is decided by the users and validators as a collective. Attempts by any 'bad actors' to take over the network will cause the chain to split,

> '…and have a fork and therefore the energy invested into [the] attempt at taking over that network has then been destroyed, because the community has forked from the bad actors attempt to take over the blockchain.' (CEO, blockchain energy company 1, 2020)

However, because the structure is decentralised, this means that it is the majority of nodes in agreement that decide what version that will be used, not that it is impossible to alter the direction of the network. This is a point of contention between respondents, in which the side of the argument that a respondent supports coincides with the type of business they will be using blockchain technology for, and thus also demonstrates the difference between the crypto-intermediary and the other archetypes.

To those who are representing decentralised organisations (i.e. usually the crypto-idealist, often the crypto-developer and in some cases the crypto-speculator), where the value of tokens or the trading of tokens is essential, the idea that central authority is being removed is paramount. For a business that uses blockchain autonomy as a selling point, it would be devastating if people believed that their community in practice could fork the code and invalidate any transactions they disagree with. Among respondents, it was more common for those who represent organisations that will mainly use blockchain technology as a verification layer or as an efficient database, as well as for those who utilise less decentralised versions (such as proof-of-stake, or consortium chains, i.e. the crypto-intermediary) to admit that because humans are writing the code, there will always be routes to alter the network.

One respondent, representing an energy company, argued that the main role of using blockchain technology for them is so that different actors within the market would prefer to trust an independent source that they and others contribute to, rather than if one of the companies involved were holding the database and transaction system in-house. For them, the trust still lies with who is part of the consortium, even suggesting that having representatives from more well-known energy companies involved has helped getting others on board:

> '…and the validators must be from the energy or technology communities. So we really want, especially in the beginning to have a set of trusted and credible entities from this sector, so that the users of these applications also have the trust, you know, in the governance of the blockchain.' (Business Lead, blockchain energy company 3, 2020)

This is not only true for those in more centralised organisations. In a similar way, one respondent representing a decentralised organisation talked about how rather than having each function and decision depending on deliberation and voting by every token holder, they do elect people to particular positions, including code development. The community (or rather the part of the community with executive capacity) typically picks representatives that have demonstrated that

they know what they are doing. In other words, they have enacted representative democracy, with the equivalent of a parliament where the validators must trust that the actor will carry out their tasks with honesty.

Likewise, one respondent commented on the topic that when leaders in a particular field meet 'off-chain' they may have an impact on the direction of a particular network, outside of the control of the community. They mentioned that some of them meet up regularly and buy each other beer using Bitcoin,

> 'I don't know how those little communities really affect the overall larger structure, if at all. Maybe just in like, you know, they're the leaders, they are the ideological feeder fish, or what do you call it? Leader fish that go out and lead, you know, which direction to go in… They do influence the direction of the wider industry just because they are always out there trying to find the new thing and bring it back to the meetings. Like, "this is what I found, talk about that". So they do have an impact maybe as like an ideological leader... These little groups… especially the people who get super involved in running the groups, running start-ups, running the blockchain associations, IEEE association or Government Blockchain Associations, those people. The people who, I think, run the government blockchain association are the ones who try to interface with government, you know, mostly. And those people probably have… an outsized influence, because they are closer to where the laws are being made.' (CTO, blockchain energy company 2, 2020).

This is indicative of the idea that technology uptake follows a formulaic adoption curve model where the role of people in the tech and finance industries is to drive almost inevitable change. Furthermore, it shows how certain people act as promotors/lobbyists for particular regulations and market developments, in a way that is far from the idea that the technology on its own is bringing about a certain future akin to evolution, as expressed by one respondent,

> '…people will realise that it is more efficient… and… doing away with bureaucracy and doing it digitally so things happen faster is evolution…drawing analogies with [blockchain] to old paradigms is kind of pointless, because it is a next step in our social evolution.' (CEO, blockchain company 1, 2020).

It is interesting that rather than trusting other people, DLT proponents are more than willing to trust that things will play out in the long run. This exemplifies the tension between the narrative and how implementation in action often results in more traditional organisational models, which is typical of the crypto-intermediary. As these organisations get their income from providing a service, whether that is through transaction fees or rent for providing a platform, they *must* allow for some centralisation or else they will not be needed.

Against the background of seeing DLT development as belonging to the same vein as the platform economy and speculative finance, we must also contextualise claims of trust in the progress of technological advancement that many respondents adhered to. The general image of DLTs, and cryptocurrencies in particular, is one of high speed, high stakes and high volatility trading. Especially in times of declining value of a token, there is an enormous outpour of messages from investors urging people not to panic and to HODL (Wolf 2018), a term that (like its anagram suggests) simply means to hold on to your tokens through the rough times until the prices rise again. To make this claim entails one of two things: 1. a belief and trust in the economic development of the sector from a neoclassical and essentialist perspective where this new market is just bound to eventually rise again, because of the inherent quality and value of the underlying technology. Or 2. A knowledge of how much the value of the individual tokens *and* the sector as a whole depends on continued interest, investment and new joiners of the movement. The first option equals a trust in economic and technological processes, whereas the second signifies a trust in people to follow economic and technological doctrine/narratives about such processes.

From the evolutionary perspective, the biggest problem to reconcile stems from the lie that assets are correctly priced according to an underlying evaluation (Bjerg 2016), and the fact that the speculation drives the prices up. However, the shift from wanting dividends on investment to wanting capital gains on speculative sales is what differentiates current derivatives markets from rentier capitalism. DLTs are in many cases akin to Ponzi schemes, as the only way the value increases is if more people join. They desperately point to the innovation and technological uses and advances that happen in blockchain, but the DLT space itself is one big bet. Every time the market capitalisation increases, it is declared that the wait is paying off, i.e. when prices compared to the US Dollar rise, and the 'market capitalisation' of crypto assets attracts more people. The people that get involved must either be unaware that it is their joining that increases the value due to the widening network of trust in the structure, value of the currency and demand of the currencies, *or* they, like the earlier investors before them, are betting on the sector attracting even more people at a later stage.

Similar to how financial crises are downplayed, as discussed in Chapter 2, the DLT space downplays 'temporary setbacks' when the prices drop, either by thinking of them as cyclical or argue that in the long run, what matters is that the space grows and that there is continued belief that DLTs will replace traditional structures. David Bleznak, CEO of DeFi company Totle, expressed this at the Global DeFi Summit 2021 (Bleznak 2021): 'We are all making a leveraged bet on the DeFi space as a whole'. What he expresses is that their investment in the DLT space is a bet on a greater development than just particular tokens, due to the superiority of what they are offering, referring to the scarce and tamper-proof nature of the DLT tokens and cryptocurrencies. I have argued that market valuations do not reflect any underlying value at all, not just because they are dependent on current hype or adoption, but because that is all that value is. We should therefore not be sceptical towards speculation in finance or in the DLT space in reference to it being fundamentally inflated and prone to crashing, while argued by some to still be worth the risk because of what it does to

innovation and economic growth. We should be sceptical because it is doing precisely what it is designed to.

Trust in the progress of technology and market economies explains why someone with a neo-classical understanding of how money works and who believes that our public institutions are breaching the social contract may want a new system that does not have the same perceived flaws. Simultaneously, this narrative is being exploited by those who seek either rent or transaction income through being providers of services and infrastructure of a new market type, as well as capital gains through the buying and selling of all kinds of assets. As part of the explanation of why DLTs are superior, proponents tend to mention the need to have 'aligned incentives', suggesting that traditional systems are based on bad incentives. However, they are the actors that suggest that people are driven by profit and that those who make mistakes have themselves to blame. They know that market capitalisation increases with more social engagement, and they know that their profit comes from successfully selling the concept of investing in DLTs to those who are unaware of the high level of risk, or who are wilfully ignoring it. At the very best, money that goes into this space consists of excess capital that those who can afford it gamble among each other, but at its worst, it is people with skills and capital that are luring those without experience or much capital to invest into a market where the former already have influence.

An investor into DLT projects or tokens may come straight from venture capital funds and/or years of speculation in traditional markets, and train new actors into thinking that bad investments are the results of bad research ahead of buying and that they *could* have predicted it correctly with more carefulness and skill. This reflects discussions of how speculation is perceived in Chapter 3. The established actors impose this responsibility on the beginner despite the *knowledge* that many blockchain start-ups and smaller coins will fail during a so-called bear market (sustained decrease in value), indicating that anyone investing in a new DLT company stands a small chance at best of making any profit. Despite this, respondents and academic papers alike still suggest that the biggest

winners in the expansion of DLT based finance are those in Central America, South America and Africa who today have no access to banking and financial services, something which will be further explored in Chapter 8.

These points make belief in the neutrality of markets and of technology seem vulnerable at best. The reality that control over these markets to a large extent is held by those influencing the space from the outside through economic power or those who are in charge of writing the code seems to be more obvious the closer to coding a respondent is, in other words the closer an actor resembles the crypto-developer archetype. One respondent went so far as to say that those who are involved in selling blockchain projects as businesses do not know enough about it to realise that this is the case.

> ‘Just because it's on a blockchain doesn't mean it's fair, doesn't mean it doesn't need regulation. So there’s gonna have to be some standards. If you got contracts for companies, you can write how fair that contract is and how the voting works. And all this stuff is actually written by somebody and then written to the chain and owned by somebody. Even if you then have within that [network] people doing voting and those things, somebody designed it and designed the rules in it. So there has to be oversight of that if you're going to start relying on blockchain based contracts to run things…I think the problem is, there's a lot of people who understand a little bit about blockchain, but they don't understand it, *really*. So there may be misconceptions about “oh, it's on the blockchain, therefore…”, but they don't really know what that means from a coding perspective, or understand the infrastructure, how it really operates.’ (Software developer, blockchain badge and certificate solutions, 2020)

To those who focus more on presenting the technology as neutral, the quest for trust without institutions and without *people*, especially when coupled with claims that proof-of-work does provide this, is seen as worth even quite serious drawbacks,

> ‘The harder it is to create, the more economically sound it is, right? And at the moment, proof-of-work, although it does have issues with, in terms of, the climate issue: the actual ecological

> problems, you know, of mining… unfortunately, for money, it's a sacrifice, but we have to accept that, you know? Even though, in terms of energy consumption – which will reduce over time! – you need to have that much at stake… to create money that everyone can trust.' (Chief Partnership Officer, cryptocurrency exchange and asset management company, 2020)

This respondent went on to say that the definition of trust 'is the expectation that the other party will act with integrity…That they will do the right thing, right?' and that for blockchain,

> '…I think, transparency is number one, because, if everything is clear and transparent then that is already a massive, you know, element of trust. Then there's also the trust that comes through the length of time. So, Bitcoin has been, you know, operating for 11 years now. The blocks have not stopped to produce one single second. It's been flawless. And, you know, having a Blockchain that has 10 years of experience, and has had essentially zero downtime, that's incredible! Like, I mean, the biggest banks in the world have at least one to multiple days where their servers go down, right, and they are starting to panic.' (Chief Partnership Officer, cryptocurrency exchange and asset management company, 2020)

Other respondents have also focused on transparency as a key feature,

> 'I think accountability and transparency are great features of anything. Being able to have them pretty much built into the underlying protocol is definitely an advantage.' (COO, cryptocurrency accounting software company, 2020)

However, it is only what actually goes on the chain that is transparent, while many of the key decisions of what happens in the industry are taken elsewhere.

There is thus a tension between statements concerning the idea that trust can be removed with neutral technology and acknowledgement that the values of developers shape what the technology looks like. One respondent argued,

> ‘I think that's the beauty of what Bitcoin offers is a sense that you don't have to trust other participants, I don't have to trust that the Bitcoin that are being sent is actually Bitcoin as a protocol verifies that for me. So the miners actually verify the actual coded protocol and how that protocol has been developed, and actually kind of go through checks and balances for itself’ (COO, cryptocurrency accounting software company, 2020)

But this was in the light of an earlier discussion where they concluded that

> ‘…at the end of the day, none of these protocols or technologies come out of thin air they all come from, from someone or some people, and definitely their views on the world, whether they're conservative, libertarian, liberal, etc, I think you'd be ignorant to say that, that doesn't have some type of impact on how the protocol is initially developed.’ (COO, cryptocurrency accounting software company, 2020)

It appears that because the values, or goals, of what the technology is meant to do are shared by the respondents, regardless of archetype, there is no issue with these values being constituent parts of how the technology operates. It is perceived to protect itself from attacks due to its transparency, so fundamental changes to the network are inconceivable. Combined with the insistence on keeping market spaces open for experimentation and the belief that unsuccessful or fraudulent attempts should be left to fail, it follows neoclassical economic ideals of market equilibrium. But, what it further demonstrates is that the technology rather than opening up to freer interaction between actors that do not need to trust each other, actually limits what is possible with a rigid technological framework. Importantly, however, it is not only the technology itself that constitutes these limits but the ideological project that surrounds it. Projects will not stand or fall with how well they have implemented permissionless or ‘trustless’ versions of blockchain, but whether what they offer is deemed investible and viable as businesses. It is the logic of speculative finance that decide if a coin, exchange, software solution or supply chain consortium has value.

The language of security, tamper-proof, transparency, and other buzzwords is there to appeal to the holders of the capital that keep it afloat, not those who evaluate the security and integrity of the system. This is also a reason for respondents not to worry about what ideological values lie behind the creation of the technology on a fundamental level – as long as it serves the purpose of pushing change towards replacing the differently ideologically driven present economic structures and institutions, in favour of deregulated markets, it does not matter what biases go into the code, as those biases are likely to be shared. If a network does something that this wider ideological community disagrees with, it is not of utmost important that the community that controls that particular network expels the bad actors, the power lies with the wider market that decides if this service no longer seems to be in line with the ideological project. This is why a project such as OneCoin could operate for several years before it was revealed that their cryptocurrency actually was an excel spreadsheet and not on a blockchain at all (BBC 2019). It was not a problem that OneCoin was not 'real', as long as the users, buyers and sellers treated it as real. Transparency does not matter for fairness, if the choice of what stays relevant lies outside of it anyway.

Keeping incentives in check is one of the underlying goals, but one that entails a paradoxical proposition: that deregulated markets work because they are rational, but that current markets fail because people have a tendency to act too irrationally (or that there are incentives to act maliciously), as discussed in Chapter 2.

Blockchain technology as a solution to these issues further demonstrates that what it actually does is delimit possible action. Rather than offering a medium that allows for more freedom and without need for trust, it reduces human interaction to a particular route, medium and formula.

One respondent expressed,

> 'I think that some of the things that I miss a lot in traditional systems, especially in politics, is that I don't believe that the incentives are built very well around how we interact with money, how we interact with finance, and these things in general, where for me, one of the things I found

> really exciting was… the way that you are building incentives directly into the technology, directly on the blockchain, so that you can make people act and behave in certain ways, and you can very easily track how people behave and verify that they do it in this way. So, to me it was kind of like a way where you take that generally people act irrationally but on the blockchain, all of a sudden, things become rational, right?' (Business Development Representative, DeFi company, 2020)

Social freedom, or the freedom to be irrational, has to take a backseat for economic freedom to be as profitable as possible.

To other respondents, however, it is not the irrationality element or even the economic freedom that is the main point of replacing inter-human trust with a blockchain. Instead, it is about increasing collaboration between individuals and/or companies and increasing operational efficiency through automating smart contracts to do what would otherwise be brokered between companies. This aligns with ideas raised by the Big Four discussed in Chapter 6, and represents the crypto-intermediary archetype. To these organisations, the vision and language of freedom and transparency is shared, even though they often utilise permissioned and multi-layered blockchain solutions with varying access and visibility to the public. In practice, they intend to remain within government regulation, and need to demonstrate that their chosen validators are trustworthy to participating companies. What they are successfully doing is presenting themselves as replacing the middleman, while being a platform middleman themselves. By appealing to increased efficiency, companies will use their software solutions to 'collaborate' with other companies, while the infrastructure provider can make their income through charging transaction fees, and sell the tokens used for the service, following the patterns of the platform economy.

To summarise, the issue of trust is one of the most important and common topics surrounding blockchain technology. As touched upon above, interpersonal and institutional trust is not removed by blockchain, but withdrawn from light, hidden from scrutiny and covered up by appealing to those

who do not understand or do not want to acknowledge that people now have to trust them as arbiters of truth through code.

7.3 – Will the public trust the blockchain without regulation and middlemen?

As demonstrated in the previous subchapter, the core argument for DLTs is to provide an alternative to trust. The accounts range from those who believe that trust can indeed be substituted by technology to those who believe that trust is enabled by technology. Blockchain technology is described as replacing middlemen altogether, in other words replace entire institutions that otherwise act as guarantors that an interaction will go ahead as planned and that all involved parties will uphold their end of the agreement.

Perhaps ironically, the biggest hindrance to mass adoption seems to be to get the public behind these promises, and DLT companies have to turn to traditional trust structures to attract more users. As expressed by Vance Spencer, co-founcer of the DeFi company Framework Venture at the Global DeFi Summit 2021, '[The] Ethereum community has been good at building robust smart contract auditing and code review peer-to-peer. Because of this, there is less hacking or [the hackers] have moved to less quality networks' (Spencer 2021). This demonstrates that the systems that are most *trusted* by users are those that have put in place replacements for the checks and balances that governments, regulators, or third-party companies perform in traditional systems. To this panellist at the Global DeFi Summit 2021, the two types of due diligence provision are not the same thing. To them, it makes a big difference that these systems are coming from *voluntary contributors*, and that they are peer-to-peer. This exemplifies a tendency in the DLT space to put such emphasis on the innovatory capabilities of the market that they miss that the things that are invented already exist. To put in place people-driven audits and review processes ahead of coding a smart contract is equivalent to the KYC (know your customer) and due diligence that is required today.

At the same panel discussion, David Bleznak, CEO of the DeFi company Totle argued:

> '…in an open free market, we are seeing creative destruction in real time and seeing that happen, you're gonna see some things you don't want to see, but again, that's what we fought for, that's what we want to see – this open permissionless system that doesn't have interference, that doesn't have- you know, it's a real free market. And with a free market, you're gonna have these instances, you're gonna have these drawbacks, where it is on the individual to be more, you know… to take more responsibility for themselves, and that's hard for people to do, because they're used to a system where, um, there are a lot of levers that are put in place to protect them, but that also creates the deadweight loss in the economics of the traditional systems, so that's core to the entire value proposition, and also the drawback.' (Bleznak 2021)

Comments as blunt as this are perhaps not surprisingly rare in discussions and published material on DLTs and DeFi. Usually, as we have seen in discussion with respondents, the main concerns with traditional finance is how the system is cheating the individual out of the opportunity to profit from savings, investments etc., only reluctantly implying that there will also be losers to a market based so heavily on speculation. What we see here, though, is an admittance of the core philosophy that those who get into 'the game' only have themselves to blame if they lose everything, and that the trade-off is worth it – the opportunity to make money off of others, as this is how we get stable economies. However, as discussed by some respondents, they are also ready to accept some regulation that protects users, as this is the only way to get enough people involved to keep it growing indefinitely.

Highlighted by one respondent, the vision held by the supporters on the far end of the spectrum is unlikely to come to pass,

> 'If we get to a point where we have some worldwide standards and agreements, on these things, that's where it really has to get in the end. Because so many of these companies are international. But it has to be done by a government, you can't rely on the company to be fair, because their aim is profit. They can't-, they're always looking for the angle of how they can

> make more money and your data is one of those. So they're never going to [do it] voluntarily, and every time you have voluntary schemes, you never get all the companies complying. So at the end of the day, you're going to need international regulations that comply companies to behave well, and give you your choice. I think I've not seen it work another way, self-regulation doesn't really work.' (Software developer, blockchain badge and certificate solutions, 2020)

As demonstrated by China in 2021, when they banned crypto mining (John, Shen and Wilson 2021), governments are still capable of putting their foot down to international and decentralised movements when required to or when it hurts their own efforts of launching a digital currency. As expected by some respondents, the widespread adoption of DLTs will more likely be a collaboration with some level of regulation, because those in political power, as well as those who have stakes in the productive economy will still have sway over a large portion of societal trust. This is exemplified by blockchain organisations needing to cooperate with established markets to attract customers in their sector, but also by recognising that there are benefits to having governance structures, as seen in the following two quotes,

> '…we have a different stance here. We realise that the energy sector is extremely slow, and very heavily regulated. So, you can't actually move forward without including the regulators into your work. And that's especially the case of renewable electricity traceability, because the markets in established countries like in, let's say, the US or in the European Union, they have been around for quite a while. So… they actually have gone through all kinds of different scenarios of renewable electricity certificates, etc.' (Business Lead, blockchain energy company 3, 2020)

and,

> '…the fact that even the permissionless public networks say, "oh, we don't need any governance, the governance is done by the community" or something? Well, no, there has to be minimum viable governance, a model that says that when things happen and when the rubber hits the road, we are able to we have kind of a clear definition of what will happen. It shouldn't be like –

> and I have nothing against reversing history – in the case of DAO[41], the problem is that it has been done kind of after the whole system failed, while what should have happened, ideally was for the governance model to be in place and the dispute resolution model be in place, and they will just follow that road.' (Ecosystem Director, open source blockchain platform, 2020)

In July 2021, the UK also announced that cash would eventually be replaced by a central bank-backed digital currency (CBDC) (Elliott 2021). Although all forms of DLT supporters may rejoice at the increased interest and use this to forward their own interests, a CBDC is as discussed earlier very similar to fiat currency, but without the pretence of the value being backed. This only further demonstrates that regardless of the promise of 'trustless' or 'trust enabled' money and markets, they still need to sell this concept aggressively to gain the *trust* of the public in this narrative or weave the technology into existing trusted regulatory frameworks.

To many DLT ventures, especially developed by traditional players such as the Big Four, their client base would not approve of an online, global community actually being able to derail the direction of their business. As exemplified in Chapter 6, the big accounting firms are placing themselves as knowledge and trust providers to act as middlemen regardless of what type of DLTs that may become industry standard. They, and several of the respondents highlight the efficiency and reliability of DLTs as ledgers, rather than them as new institutions. The 'trustlessness' or rather, 'trust enabling' element is still in line with an anti-human sentiment that bolsters the need for new technology, but these actors do not want themselves as human mediators to be replaced. The quote from one respondent (as seen on page 169) exemplifies this view with their position that those who use DLTs mainly for speculation do not know enough about the technology on a fundamental level to explain their promises of societal evolution. This respondent was also enthusiastic about the

[41] This is a reference to a Decentralised Autonomous Organisation (simply named the DAO), which on its launch in 2016 experienced a hack that cost investors $70 million. The alleged irreversibility of transactions that is one of the key technological promises for giving a cryptocurrency its integrity would have meant that there was nothing to do about the hack – money moved is money lost. But going against some of the core pillars of cryptocurrency doctrine, the userbase voted to reverse all transactions, fix the breach, and try again (Falkon 2017).

future of the technology and utilised the same type of language about disruption as others, but was referring to the ease of use for the average person, rather than ease of creating new assets and markets. In another way, this means that this respondent and others like them, place their trust in society to uphold the necessary regulatory frameworks for technological advancement.

Particularly for DLTs in the energy space, the use of tokens and cryptocurrencies are mainly to speed up transactions and to enable the selling of energy across the main grid without dealing with the big energy companies. As I have argued, this reflects deregulation and liberalisation of the energy market more than it is about replacing the trust mechanisms currently in place in the energy market.

For energy start-ups, the language is in line with wanting to be like the big energy companies, rather than to replace them. The talk about trust usually remains the same, but the difference is that these respondents and representatives focus on the reason for trusting them as middlemen, that the technology itself is transparent and that using it automatically means that the process is transparent.

From this perspective, it is actually less about *trust* and more about *distrust*. One respondent even expressed that they did not like the term 'trustless' as it implies a lack of trustworthiness,

> '…as not a native English speaker, when I hear trustless, to me, it just kind of coincides with untrustworthy, or that you don't have the trust, which is not really the case.' (Business Lead, blockchain energy company 3, 2020).

They argued that it is more about enabling trust between different entities and across borders, particularly in the energy sector they operate in. At closer inspection, however, it does not enable trust between these stakeholders, it enables stakeholders to trust the platform and that it will uphold its scrutiny of all parties involved. If anything, it is precisely because they do not trust the other stakeholders that they opt to include a third-party platform that ensures transparency. Transparency is the opposite of trust, as it suggests that humans always need to be under surveillance. This view of collaboration and cooperation that is assumed for DLT networks is

therefore rigid, but also reduces cooperation and collaboration to a mutual policing. Rather than offering collaboration, a DLT network offers a way of always keeping tabs on other participants. The ubiquitous and positively charged concept of transparency may seem like a trust-enabling concept, but rests completely on a fundamental belief in the lack of trustworthiness in humans.

It is worth considering to what extent this type of policing elicits the behaviour it seeks to prevent. As we have established, a claim upon society is only as strong as the consensus about its perimeters. A DLT-based system promises to reduce an assumed risk which may or may not be warranted. But, regardless of how much a non-DLT system is subjected to the types of behaviours that complete transparency can reduce, it approves of the drive to cheat the system. Because of the reduced possibility to appeal or overturn transactions that have happened, the type of total surveillance that DLT transparency offers could be seen as an invitation to cheat, if you can get away with it. Rather than supporting trust between actors, the goal of removing trust imposes the idea of cheating the system onto all actors. While this could be seen as a levelling of the playing field, it is only possible to have complete oversight when potential action has been simplified to the type of transactional system that DLTs are.

Positioned as crypto-intermediaries, clients of DLT platform companies will have to buy their services through them, using their tokens and/or use their cryptocurrency. This requires a trust in them as middlemen/intermediaries, only on a smaller scale than traditional companies. This is different from the trust in the evolution of technology in which the speculators have bet huge stakes in economic, political *and* social terms.

7.4 – Trust in the social contract

Speculation and intermediaries aside, the reason for the rise in number of DLT supporters could also be explained as a loss of trust in the social contract, or at least an attempt to redefine it. In the same rhetorical vein that sees democracy as being in a state of disrepair, due to corrupt career politicians, DLTs as the remedy capitalises on the publics distrust in ‘the system’. Especially in the wake of the

financial crisis of 2007-08, people's *trust* in traditional financial actors leaves them wanting something that can prevent it from happening again. However, the explanations for why it happened differ between sources and DLT supporters are offering an explanation that resonates with the common sense understanding of what makes money valuable.

Sociology has since its beginning been largely centred on the idea of fundamental changes to societal structures in a way that resembles paradigmatic breaks. From Tönnies' (2002) description of the shift from gemeinschaft (community) to gesellschaft (society), and Weber's (2012) account of the rise of instrumental-rational action, to the focus around the turn of the millennium of the shift from this industrial/ modern/capitalist society to a post-industrial/post-modern/globalised society. As raised in Chapter 2.5 and as I will discuss further in Chapter 8 on democracy, one element of this latter description of the post-modern era is the individualisation of responsibility and with it an expectation of social movements to be oriented towards individual self-realisation. However, a large part of this discussion usually suggests that there is also an increase in the general level of 'risk' and rationalisation of behaviour, in turn suggesting that the social contract as a concept has become more fragile over time.

Savage (2009) calls this way of theorising 'epochalism', a phenomenon of distinguishing social phenomena by how they differ from perceived previous epochs. While Savage continues to argue for a view of social development on a continuum that is traceable through its connection to the past and which he argues should rely on particular social scientific methodologies, I am here merely using the term to describe the type of reasoning that suggests that there has been a quite sudden and complete change to how we relate to each other as people in society.

The problem with the assumption that society has changed at large is that it feeds into the reasoning behind the claims of 'the end of history' (Fukuyama 1992). The ideas themselves, perhaps most recognisable in Beck's 'Risk Society' (1992) and Giddens 'Consequences of Modernity' (1990) (and

subsequent works by both authors), inadvertently act to reify effects of capitalism as if they actually modify relationships on a fundamental level.

I would like to stress that elements of Beck's (1992) theories play an important part in my central argument for this thesis, in particular his insights into how risk has become an organising factor in society, allowing the uncertainty of certain economic behaviours dictate political choice. It is not these ideas I am referring to here, but rather the almost Weberian worries about a kind of moral corruption of the individual as a result of the success of instrumental rationality. It is true that people living in our current time on a personal level have to relate to new types of risks and perhaps at a larger and more immediate scale than some of our ancestors, but this would also suggest that trust in others has changed. This resonates with popular ideas about how the 'information age' has ushered in a new type of life which is completely in line with claims from the DLT communities about the 'evolution' of technology and social interaction, as exemplified by the quote from one of the respondents seen on pages 165-166.

In other words, agreeing with alarmist ideas about how social life has been undermined is similar in its agreement of social development as a constant progression, and critique of economic inequality that is based on neo-classical definitions of money lose their edge.

If we instead turn to Simmel, he suggested that money is a *claim upon society* (2004: 176), which speaks to the reality of money as nothing other than a network of trust between people that in turn relies on trust across society in money as a concept. Furthermore, as I discussed in Chapter 4, based on the work of Zelizer, Bandelj, Wherry and others, monetary forms take many shapes, both formal and informal, and require continuous work by those who utilise the system to keep the performance of trust in play, including instances of suspension of disbelief, when players act differently than expected. As I have established throughout this thesis, DLTs usually incorporate and depend on a currency or token and pride themselves on offering an alternative to fiat money and to financial systems and institutions. With an 'epochalist' outlook, their insistence on providing something new

that alters people's relationships with each other and society in general may appear believable. However, with a relational outlook on how they operate, nothing has actually changed in how trust is required for economic networks to work. As even the most instrumental-rational engagement requires a trust network made up of social relations, and as even the most personal material exchange contains elements of economic action, people are not at risk of losing 'gemeinshaft', but their relations may just have become more abstract. From smaller communities to complex global networks, trust is implied and less personal, but nevertheless equally social and interpersonal. DLTs are claims upon an unspecified global society, and so the social underpinnings thus remain, but the uncertainty and non-specificity helps their cause, as it leaves the explanation out. This leaves a vacuum that can be filled by the narratives that have been highlighted throughout the thesis.

Rather than the 'epochalist' or even the 'embeddedness' explanations of why certain effects seem to have worsened with the financial expansion in the neoliberal era, it is a change in dominant values and understandings that we should address. Rather than trying to explain a fundamental shift in interpersonal relationships that has not happened, we need to explain how the belief systems that underpin certain applications of these trust systems result in less desirable effects.

The common-sense understandings about these aspects of society serve to uphold ideas about a shift in societal trust to now be more precarious, fragile and which has failed, as exemplified in the scepticism many express towards the financial system and banks after the financial crisis of 2007-08. It is by providing simple explanations as to why trust should be replaced by technology that DLTs garnered their initial traction. But the issue here lies in the misidentification of the problem.

It is not trust *as a concept* that is problematic and in need of a change, but the *specific* trustworthiness of the financial system as is. By assigning blame to interpersonal trust as irredeemably corrupt or even corrupting, DLTs circumvent the problem of a specific dominant system which is based on unequal concentrations of economic, cultural and social capital, which in turn is generated by the traditional financial system, and replaces it with a technological solution

that is underpinned by the exact same system of trust and which also reproduces the same system of inequality.

Because of the impossibility of *knowing* (for example the 'true' value of an object) outside of social agreement, we can also never have perfect money, only strive towards our image of the perfect monetary form. The trust that is needed for a project to move forward, be accepted, and adopted by people thus builds on a shared vision among those involved, in this case the wider society and participants (willing or not) in the transfer of financial capital into the world of DLTs and cryptocurrencies. In Davis' (2020) article on the methodology of Zygmunt Bauman, he considers Bauman's term 'active utopia' (originally used to explain that socialism never will be reality, but should act as a guiding principle) and argues that this applies to how Bauman's methodology treats empirical reality – in other words that *knowing* only can act as a guiding principle rather than a realistic goal. In contrast, the general assumptions associated with DLTs could therefore be seen on the other end of this spectrum of different fundamental ontological assumptions, representing a position that suggests possibility of empirical certainty and reliable reality. This places DLTs in a broader movement that seeks to establish stability and calculability to remedy the turbulence in the economic and political world, but which I have argued throughout this thesis is actually fundamental *to* the social world. This suggests that underneath the ideas of money and markets that were discussed in Chapters 2-4, whether they are earnest or are put in place deliberately to uphold unequal distribution of money, there is an attempt at forcing the social world to become predictable. In this sense, DLTs are not only reactionary, but in the same vein as populist movements that seek to return to an imagined time of stability, or as Davis puts it, '[a]cross the political spectrum of today, from the populist Right to the populist left, the message is not quite back to the future; more onwards to the past!' (Davis 2020).

This is inextricably linked to the concept of trust and the composition of the social contract. As neoliberal policies and imaginaries have increasingly individualised people's relationship to society,

the active utopia of a shared, collectivist view of the future may have lost some support among the public. In the UK, we can see this in how suggestions for economic policy that are oriented towards public investment are often portrayed and received as irresponsible and unrealistic. In other words, there is reduced trust in the Keynesian presentation of certainty, even when Keynesian policy is implemented, for example when bailing out banks or providing furlough and loan schemes during the Covid-19 pandemic. As the ideas of 'economic man' and perhaps even 'speculative man' have become the way success is viewed, the increased interest in trading in cryptocurrencies and investing in DLT ventures comes in part from the trust that they put in those who present themselves as experts by virtue of being rich.

This leads to an interesting combination of DLTs being rooted in distrust in the traditional financial system, but dependency on trust in those who are established authorities on what to do in finance. The growing interest in DLTs, DeFi and cryptocurrencies therefore appears to be exponential, as increased interest from those with wide-ranging portfolios to their name is seen as a stamp of approval and thus encourages others, and the wider public, to believe that it is sound. The difference is that this trust is then not encoded and entrenched like in traditional finance, and even more so than for the stock market, rumours or withdrawn trust in DLTs from established players hits even harder.

With calculability, predictability and individual responsibility being key terms for much of neoclassical economics, as well as what supports neoliberal policy, they are all operating within the same dominant understanding of how economies, markets and money forms work. It is therefore also useful to consider Baudrillard's concept of *simulation* (1993) and that structures that claim to *know* the reality of something need to be challenged at the core of what is presented as self-evident, as a way to engage with dominant knowledge. At his most abstract, Baudrillard describes our current reality as a simulation, a reference to how dominant structures reproduce knowledge about themselves without any reference to or anchoring in reality. I want to argue that this is the same

process that allows speculative finance, company valuations and asset prices to soar indefinitely – they are all within a system that can explain to itself why this is reasonable, and will continue as long as that narrative remains convincing to the people involved in it, and to a large extent as long as the general public agrees or understands little enough to question it. Baudrillard sees these things as signs that are symbolic of nothing but themselves, in other words signs of signs.

The problem is that a knowledge system which controls the production of meaning will be difficult to distinguish and it is almost impossible to demarcate what belongs to the structure and what is information that is resisting or opposing the dominant view. The thoroughgoing thread, however, within the logic of neoclassical economics is that the more that is explained and demonstrated *for what it is*, the more understandable, predictable and stable an economy will be. It is in the interest of neoclassical economics as a discipline that increased knowledge about a market and decreases in information asymmetry are essential to the improvement of said markets. From Baudrillard's perspective, however, the increased level of predictability and calculability actually moves us further away from the possibility of resistance to these dominant truths. He argues that instead of trying to provide definitive explanations of phenomena, which only add to the all-encompassing system of 'signs of signs' we should instead challenge the assumptions by purposely rendering phenomena more ambiguous. It is only through the questioning of what is presented as definitive and/or self-evident that we can hope to get a foothold for resisting the relentless search for calculability.

7.5 - Conclusion

I have in this chapter argued that trust is at the centre of any monetary form, any network of human interaction, and therefore also DLTs and cryptocurrencies. This consists of multiple levels of trust. In the first instance, there is trust in the agreement that a monetary form will be redeemable, whether the narrative suggest that this is due to an inherent value, scarcity, technological robustness or from being guaranteed by a government. This leads to trust in ideas about the market and the economies themselves, but for DLTs it most importantly involves trust in the progressive and inevitable evolution of technology and society. This part of trust forms an essential part of the imaginary and

associated narratives, which argues that DLTs will be able to deliver what they promise. However, I have also discussed how actual implementations of DLTs often rely on regulation and intermediary structures as the public and established companies tend to demand trusted systems and participants that are based on established reputation.

I have further suggested that these narratives are supported by a general shift of trust in the social contract and a reimagining of what an individual's role is in society. By appealing to disappointment or outrage at how societies (particularly governments) have dealt with crisis in recent years, the simplified answers to these difficult issues makes the narrative appealing to many people.

This chapter has thus helped address the aims of this research by giving some further examples and analysis of the trust element to the imaginaries present in the DLT space. It has also provided examples of different motivations and approaches to the technology and connected these to four different archetypal actors interested in DLTs and cryptocurrencies, 'the crypto-idealist', 'the crypto-speculator'. 'the crypto-intermediary' and 'the crypto-developer'. In my analysis of these themes and archetypes, I have thus given partial insight to all four research questions and added to our sociological understanding of DLTs by focusing on the multiple aspects of *trust*.

Chapter 8 – Democracy

In this chapter I will explore claims about DLTs potential role in democratising money, markets and society at large. Claims by companies in official publications, and by the respondents of this research have tended to refrain from defining what is intended by 'democratise' or even 'democracy'. It is therefore useful to divide claims into categories so that we can discuss the theoretical assumptions that these claims rest on, as well as what the effects of the claims may entail in practice. Divided into subchapters, the chapter will begin with a discussion on the concept of decentralisation, which is often cited as one of the core pillars of DLTs, a theme carried throughout grey literature and among respondents. I will problematise assumptions that decentralisation by default is democratic. In the subsequent subchapter, ideas about financial participation as automatically democratic will be analysed, followed by a subchapter addressing the conceptual relationship between democratisation and emancipation, which over time has seen a move of both responsibility and goals to the individual rather than groups in society. In the final subchapter, this is further extended to discuss how the language of emancipation plays a role in sustaining global inequality, both for individuals and sovereign countries. As in Chapter 7, the theme will throughout be informed by the insights from the literature review, and will at relevant points also highlight what statements reflect which archetype. Through this chapter I further add to our understanding of the four research questions in a similar way to Chapter 7, as I cover elements of democratic imaginaries (RQ1), discussions of who is involved and how they view the technology (RQ2), how promises of democratisation are seen as beneficial (RQ3) as well as how to better understand the relationship between structure, operation and outcomes from a sociological perspective (RQ4).

8.1 – Decentralisation as democratisation

Decentralisation in DLT discussions is often presented as the equivalent of democratisation. Being democratic is therefore to remove power from a central point and send it out to the people. The respondents often used this rhetorical move to suggest that responsibility and power should be shifted away from central authorities to neutral and secure DLT based solutions, while

simultaneously arguing that the very same democratic benefits can easily and quickly be revoked when there is a perceived need to centralise a feature for efficiency purposes or to deal with a security threat. Decentralisation is also often intertwined with other common terms, such as transparency, another concept that sounds unequivocally *good* but without a clear link to democratisation. Both decentralisation and transparency *can* of course as concepts be important to democratisation, and in many ways they can make it easier to keep tabs on the systems that are in place, but that does not have to be the case. Rarely in discussions of DLTs and democratisation is it made clear how these points are linked. After all, the transparency of all actions being openly visible does not necessarily mean that the average person could do anything about them.

As quotes from respondents will demonstrate, decentralisation is touted as one of the main reasons why DLTs are more democratic. Rather than having all the power concentrated at various institutions, power is supposedly dispersed. As we see with most DLT solutions, however, decentralisation is a word that is used to invoke positive sentiments, but which is easily abandoned at various instances. For the respondents, because their particular companies rely on centralising the function of their service, decentralisation quickly changes from a core goal to something on a spectrum and which should either be introduced incrementally, or that will have to be toned down for the sake of efficiency. This is again a good example of how the crypto-intermediary archetype approaches these ideological differences. As discussed in Chapter 6, the Big Four accounting firms, for example, do not bring up decentralisation at all, but focus on transparency and efficiency.

To further muddle this topic, the DLT space does not tend to clarify or define what is typically meant by decentralisation and that there is conflation of the term with the adjacent concept of being ‘distributed’, which merely means that there are multiple copies spread out, that are all synchronised and kept up to date. Some of the respondents did find the issues with decentralisation to be interesting topics to discuss, particularly because of the difficulty to clearly define it. One respondent also raised that there is a risk within most distributed DLT networks that a majority of

the nodes actually could be in the same physical location, which would undermine the alleged *decentralisation* or *distribution* of power,

> ‘So [that] is a very, very hard problem. Because intuitively, decentralised means on many machines, that there is no *one* machine. Well no, not even that because that's the peer-to-peer aspect. But in general, you know, as long as it's running on multiple machines, then that's great - It's decentralised. But if all of those machines are in the same room, then I would claim it's not really decentralised. Or that it is decentralised but not distributed, maybe that's the way to look at it.’ (Ecosystem Director, open source blockchain platform, 2020).

But overall, like most issues raised, this topic was also usually assumed to be solved over time by the communities – as mere bumps on the road of inevitability, rather than fundamental flaws with how the democratising role of decentralisation is supposed to work (as discussed in Chapter 7).

Decentralisation as a concept rather than meaning that power is dispersed throughout entire populations, merely leads on from the idea that financial liberalisation is a democratising development. Decentralisation in the DLT space is shorthand for liberalisation and deregulation. If the core principle on the financial side is that removing barriers to trading is inclusive and will benefit the common person, then decentralisation is the accompanying deregulation of the markets themselves. Because DLT companies and platforms aim to be indispensable to a particular function, they would of course not want a situation where their communities could undo all the work they have put in. One respondent did express that as long as it goes through a vote, they would be fine with changes to the technological solution, because hindering it would be to stifle innovation (see page 195). The ideals of decentralisation therefore seem to be anchored to the assumption that competition breeds innovation.

Furthermore, it also became evident in the interviews that most respondents were more concerned with the liberation of some functions than they were of others. Decentralisation of areas such as energy markets, financial markets and collection of data were seen as priorities, or as areas where

people are being held back by traditional institutions. It was in connection to these points where the evils of central banks and corrupt politicians were presented as the issue and decentralising these functions onto DLT solutions were the remedy. However, when it came to areas that are not directly profitable, DLTs were presented as helpful tools that governments could utilise to make their processes fairer and more transparent.

These areas included voting, where many respondents saw that DLT solutions could be a more secure way of doing electronic voting. These discussions tended to be more hypothetical and based on general promises of the technology, and respondents assumed that for uses such as voting and storing healthcare records the best solution would be for governments to use the technology, not to 'hand over' control over the whole function to a DLT company. This suggests that the interest in decentralisation is only vital as long as it is profitable. But regardless of which form – whether it is deregulation of an entire (actual or potential) market or just using DLTs for a particular government-controlled function, it still remains a 'handing over' of control from something that has traditional institutional safeguards to a technological platform where we see centralised control and override capacities concentrated to the small group of people that act as custodians, who vote through holding tokens. This also demonstrates that the same respondent can have attitudes that correspond to different archetypes depending on the topic. It is therefore possible for an actor to take the crypto-idealist or crypto-developer perspective to areas that they do not have economic stake in, while remaining aligned with values of the crypto-speculator or crypto-intermediary elsewhere.

Furthermore, respondents expressed concerns over how 'money talks' in traditional politics, but as we see DLT companies trying to attract investment from the very same institutions and individuals, many of the traditional actors will likely retain their influential roles, such as the Big Four. The main difference is that regardless of how national regulation affects the classification of cryptocurrencies and other DLT tokens and how this affects taxation and sales in domestic markets, their trade and

the voting capacity of a token holder remains international and instantaneous. In this way, the 'decentralisation' in the form of deregulation will succeed on this level – of having organisational features of potentially influential platforms out of reach for regulators. Importantly, though, is that a DLT is not actually needed for this purpose. Investors having influence over the direction of a company is not new or unusual, and neither is it for influential stakeholders to have direct lines of communication to sway the development of a business. As discussed in Chapters 2-4, actors rich in economic, social, and cultural capital can steer markets and mobilise regulations in their favour in the platform economy, the DLT space, and beyond.

Giving some more examples to the points raised above, I will here address what decentralisation actually means to those in the DLT space. Asked to define what makes something decentralised, respondents preferred to see it as a spectrum where solutions can be more or less decentralised, rather than a binary choice. Even the most decentralised and distributed blockchain implementations tend to be developed first by a core team, and then released to the public. One respondent, (working for a decentralised finance organisation), suggested that there have to be trade-offs for efficiency. They argued that it would be terribly time-consuming and inefficient if *all* decisions were made by the whole community, and that this would benefit no one.

> '…the problem with complete decentralisation is that it is horribly inefficient, right? In an organisation where a single person takes all the decisions, that's very efficient, you just take decisions. The further you go along democracy, and the further you go towards complete decentralisation, the more inefficient it will be, so [this is] why you simply *need* to have, kind of like, from my perspective, these different groups of people who can take care of different interests for [the organisation] and yes, it does create, you know… some more centralised friction points… but you wanna educate all the thousands of people who participate in this to be risk experts every single one of them? No – because that's simply not possible, right?… what do

you want to achieve with decentralisation, and how are you going towards it?' (Business Development Representative, DeFi company, 2020).

The view of democracy that is being portrayed as the goal, on a hypothetical level, is direct democracy. However, in practice there are reasons given for keeping executive decisions within a chosen group of representatives, which depending on the organisation may be among the community members or from companies involved in a consortium. In practice, it is not a direct democracy, but something more akin to a cooperative.

In most implementations, particularly for the crypto-intermediaries, the models blockchain companies end up using seem to be very similar to either classic corporation boards, or representative democracy. Unlike the representation of all citizens that national representative democracy offers, these organisations are behind boundaries that are be unattainable to most people in the world. The transparency and openness of entry that the most decentralised organisations offer is still only for those who know that they exist, know how to use their interface, and have the time and money to engage with this sort of project. In addition, those who make executive decisions are usually either large investors or those with very specific technical knowledge. To the blockchain organisations that operate using a token for voting, it is only those who have 'bought in' that can actually take part. It is only democracy for the technically literate and with a pay-wall. This adds to the logic of a closed circuit of initiated and knowledgeable people, or communities of 'just us', as a feature of both the so-called 'sharing' economy and the monopolising tendencies of platforms in general (Nelms 2016; Nelms et al. 2018).

As with the promises of being tamper-proof, the promises of decentralisation can technically be broken if the situation is decided to be dire enough. When discussing the incident that happened during the launch of the DAO on the Ethereum network in 2016, responses from respondents varied depending on the type of company that the respondents represented. Those who operate platforms

explained that they have a responsibility to the users if there has been a breach or mistake that would cost them a lot of money,

> 'We probably also would want to take some responsibility, you know, if a similar case happens to [our DLT], because we are the ones who are maintaining the chain, and we're the ones who want to make sure that it's safe… [For the DAO] the intentions were good, but it could be a slippery slope, though. However, you know, the fact that there was a vote, and that would be the same for [our DLT], because nothing just can be done unilaterally, you always have a vote that sort of provides a kind of buffer for making sure that decisions are going through some kind of a screen check.' (Business lead, blockchain energy company 3, 2020).

One respondent went so far as to say that hacks are to be expected, just like with anything else on the internet, and that some communities just decide that they want to change bad outcomes, but stressed that in the case of the DAO this was not *really* about changing the code, but to provide a software update that validators can choose to ratify or not – it is up to the majority of users if they want to have a forked version where the hack did not happen or not,

> '…eventually, you know, [blockchain] will be as secure as anything else on the web is, you know, you still get people breaking in and nicking everybody's information all the time online, right? So all these things have attack vectors, it's gonna carry on like that, and [for the DAO] some people didn't accept it. They can't change your particular code… but they can put a new software release out that has intervened in this contract. But they can't change your particular smart contract code. It's up, it's in 50 million or 1000 copies everywhere. They can't affect that. But then you have the other issue, that code is only as safe as the person who wrote it.' (Software developer, blockchain badge and certificate solutions, 2020).

To those who use cryptocurrencies for payments or who believe that proof-of-work is the only true decentralised solution, 'correcting' mistakes such as was the case with the DAO would undermine trust, in a similar way that having a central leader figure would,

> '…having a figure, a CEO or a leader, that would be really bad for the trust. It needs to stay anonymous like it is now and leaderless, like it is now… and the other thing, with the… maybe the chain gets hacked or, or the Blockchain breaks, that would be a really bad one. But, if it breaks, I think it would only be a temporary issue, you know? Just like, people would lose a little bit of trust, but it would recover just like, you know, any single problem, if you make a mistake, right? It takes time for people to just feel, uh, confident again.' (Chief Partnership Officer, cryptocurrency exchange and asset management company, 2020)

This statement simultaneously argues that having central control would be devastating, but also suggest that a hack is temporary. It is assumed that *someone* will fix that hack, without reconciling how this fits with not being centralised.

One respondent remained firmly within the realms of the crypto-idealist in their views on this topic, and argued that the *only* thing we should use Blockchain technology for is Bitcoin, and that as a payment system, not as a store of value,

> 'Bitcoin is not a currency. Bitcoin is a payment system. So, you are only exposed to the volatility in the time it takes you to complete the transaction…If you choose to hold your bitcoin afterwards, then you're exposed to the volatility of the value of that data on the network, and that's your choice, because you have chosen to hold it as a speculative instrument, or as a commodity, but that is not what it was intended to be. It's meant to be a peer-to-peer cashless payment system, not currency, a payment system.' CEO, blockchain energy company 1, 2020

From this perspective, anything else can be done on other systems as you have to add off-chain information. This concentrates a lot of power to one solution and leaves little room for alternatives.

Decentralisation therefore offers several conveniences to blockchain organisations. Decentralisation can be invoked to appeal to democracy but can simultaneously be overridden in the case of emergencies, in a very similar way that bail-outs are seen as necessary remedies to financial crises.

Crises in either example are both deemed to be exceptional circumstances brought about through external factors. It also offers the central platform a way of washing their hands of responsibility.

Despite this paradox, of centralising features of their decentralised operations where there *needs* to be control, respondents often defended blockchain companies through making comparisons to what are perceived as much less democratic traditional corporations,

> 'These people that run these companies are not elected. They have political biases, and you know, …Mark Zuckerberg didn't become CEO of Facebook because he is a great political leader, right? So, you know, maybe he shouldn't be the one making all of these decisions.' (CTO, blockchain energy company 2, 2020).

Similarly, another respondent argued that in the blockchain space, as in the rest of human life, there tends to be tribalistic behaviour around certain ideas. In particular, they argued that because of this it is even more important to let all parties be heard. Concerning the question of what would happen if the community decides to go against the initial ideas about decentralisation itself the same respondent said,

> 'as long as it goes through a vote, and that you use decentralised systems to make a vote and it happens in a respectful way, you know why not? …we cannot all agree, because that will stifle innovation, right? Competition creates innovation. For those reasons, you know, if… let's say team A believes proof-of-work is the right way to go, but team B believes proof-of-stake or proof-of-delegated stake is the right way, then let it be. You know, it's worth testing, we're still in the very early days, and experimentation is absolutely key.' (Chief Partnership Officer, cryptocurrency exchange and asset management company, 2020).

The same respondent also argued that

> '…one of the most legitimate use cases for Blockchain is voting. Just think about it, like… what are- what are the things that people trust the least? You can tell me if I'm right or wrong,

> probably you would say the banks, or some sort of like, the financial industry, some actor in the financial industry? And in the second one, it would probably be the government…. So that's one thing where you understand Blockchain…the government needs it. Because clearly a lot of people don't trust the government. And within the government practices, I think voting is by far one of the most critical. Because there are a lot of votes that happen in a weird way. The ballots are counted behind closed doors, they share the numbers, but the process is not transparent, um, there are a lot of issues in terms of trust when it comes to voting, so… that's definitely one thing they can do, and then I think that the second most important use case for, actually, the most important use case before voting is digital identity.'

These are two separate approaches to democracy. In the first instance, those who operate chains should be allowed to have more centralised solutions, as long as their membership approves, whereas the second position argues that because blockchains are transparent, government related voting should also go on-chain.

In practice, this means that the suggested remedy for the lack of transparency in the traditional democratic process is to move oversight onto systems that are controlled by a group of people that may or may not decide to uphold decentralised values or approve transactions, depending on what they stand to lose. It is possible for a majority of nodes that disapprove of the result of an election to fork the code and have a new main chain that invalidates the results. Alternatively, if these blockchains for voting were controlled by a consortium or private network of validators chosen by the government, it would not be much different from current systems.

Decentralisation as a democratising feature seems to mostly be a lofty word that carries whatever promise the speaker wish to imbue it with. In practice, when running the DLT companies, 'decentralisation' is often dismissed for being inefficient, and that delegating work to specialists and having community members vote on particular end-stage options is more convenient. This development appears a lot like the representative democracy that people around the world already

enjoy, but with the crucial difference that there is only a very small group of people that define the perimeter of action and how the system will look, before they dare to release it to the masses. Furthermore, a system that gives voting power to those who hold tokens results in vulnerability to unplanned centralisation through the amassing of tokens, a possibility that there are few (if any) safeguards for. Reports from the DLT space and the statements from respondents thus tend to reflect two separate standards for democratisation in relation to decentralisation – on a general level it is presented as more democratic and a gold standard for most of society's functions, but on the practical level, closer to their daily business, they wish to have certain functions centralised around them, as long as their small community agrees.

This means that decentralisation often acts as a selling point for a company that in practice will act as a middleman or crypto-intermediary, but instead of having a government bureau or a board of directors, there is a board of validator nodes, which usually comes from within a particular group of people interested in, and knowledgeable about, blockchain technology and cryptocurrencies. One respondent pointed this out, saying,

> 'another thing to look at is who's behind these projects. And for most if not all the projects out there, there's like a centralised leader or a centralised group of leaders that dictate how the protocol is being built and the trust that's relayed onto that protocol, and through the transactions… But there's definitely things where decisions can be made that benefit the few at the expense of everyone else… and I think one of the biggest things in crypto right now is really the push towards DeFi or decentralised finance. Right now we're kind of modelling the structure of traditional finance, we're just calling it DeFi. So you look at [project name] and you look at other projects that have raised venture capital - Bitcoin can't raise venture capital, there's no company to invest in. So right there, you already have the possibility of reduced trust. You have started seeing… these central authorities make decisions that are not always in the benefit for the larger community. And I think that's what we see in traditional politics or traditional

> governance, you have kind of a community that votes people in, like, in their campaign speech everything's great, and I'm gonna be the best for you. But then they get into office and they have to, unfortunately, kind of meet the demands of the people that got them there. And I think we unfortunately see that in crypto right now where money talks. I think we live in a capitalist society where money will always talk, and as long as the money can still buy influence and buy votes, I think we're living in ultimately a somewhat corrupt system. It's just how corrupt you get. But, in crypto, I don't think there's been that many projects that have gotten to the level of corruptness or cronyism that we see in traditional markets.' (COO, cryptocurrency accounting software company, 2020).

What this respondent is highlighting is that it does not matter where you move a function if it is still modelled on the same principles or has the same flaws. The difference, however, is that within traditional institutions there are formal routes to appeal and third-party control mechanisms. If finance is decentralised in the way that is happening through DeFi blockchain projects, the same system of 'money talks' will be in place, the same elite group of people will make the decisions on how the structure works, but it will be out of reach for national regulators.

One respondent saw decentralisation and democratisation in a different light. To them, it is inevitable that there will be government oversight over any solution that involves digital ID, voting or blockchain based certification services, as well as a high likelihood that smart contracts will be standardised with lawyer-approved pre-sets in central databases. This respondent argued that the democratisation comes in the form of citizens getting control over their personal data. Blockchain should not lead to a big 'one world' solution, as proposed by Ethereum, but instead increase choice and options for individuals,

> '…what you want in the future is options. You don't want absolutes. Some people care, some people won't care. Some people can get some benefit from their data, but it has to be fair, and there has to be choice. And I think at the moment, there is very often no choice and it's not

> fair…So I don't see- I'm not in the One World chain vision' (Software developer, blockchain badge and certificate solutions, 2020).

This same respondent argued that the people, especially from the finance sector, who suggest that blockchain technology creates impenetrable trustlessness, do not know enough about how the technology actually works (as seen on page 169). They argued that to them, blockchain is just a useful piece of software that should be seen as a new type of stack.

To reiterate, the different approaches to decentralisation as a democratising factor that have been discussed fit differently with the different archetypes. First, 'the crypto-idealist' thinks it is important and that any tendencies within DLT developments that resemble the possibility of corruption and cronyism of traditional finance have to be approached with caution. Decentralisation is therefore a goal and an organising factor. However, as mentioned in the literature review, there is no questioning of assumptions about the origins of value and neutrality of technology and markets and so the likelihood of similarity between a DLT and a traditional system on this basis is denied. Second, the 'crypto-intermediary' utilises decentralisation only in a narrative sense to attract attention and investment to their platform. In practice, they will operate with quite traditional hierarchies and division of labour and the goal is to get users to choose them, to buy their tokens and to help them with free labour as part of their community. Third is the 'crypto-speculator', which is usually a speculator and who to a greater or lesser extent may adhere to the early ideals associated with Blockchain. The goal with decentralisation for the 'crypto-speculator' is to undermine central control of governments and to profit from taking part in these unregulated markets. Fourth, the 'crypto-developer' presents themselves as a realist. Their goal is to utilise DLTs for practical solutions to problems and have no issue with governments retaining oversight or central control. Decentralisation to them is about decentralising access to information, and they usually want these services to be free or at least cheap to use, hoping that DLTs will add a layer to our current society much like the internet did.

8.2 – Democratisation through financial participation

Claims concerning democratisation of finance tend to focus on participation in markets, which are usually speculative and filled with risk. The general idea seems to be that formal access to markets will increase the income of the general population, and thus include bigger parts of the populace among those with economic power. As discussed in Chapter 2 and 3, this has been a tactic among tech platform companies to attract more investment, which gives the service providers money today for promises about the future that they do not need to see to the end. It also plays into the narrative that 'anyone' can become a successful predictor if they possess the right skills, despite this rarely being the case. DLT organisations that perpetuate this image often use the idea of being a community of those who have 'realised' something to make those involved feel like they now belong to this elite group of people that can and are making the correct choices in the economic landscape. Creating an image of a community also blurs the line of who is responsible for the actions taken and content that is put out. One respondent argued that it would be absurd to hold developers of a DLT app or service responsible for what users do with it. They insisted that there is a difference between what kind of behaviour that is *possible* on a platform, and what behaviour is *intended*. They argued that intent is really difficult to know or prove, which makes accountability a tricky question for DLTs.

From an economic point of view, it would of course be very inconvenient for any DLT if they as providers of a network and service would be held accountable for what it is used for. To a large extent, dispersing responsibility is a key feature of any DLT, both in the stated goals of being decentralised and for avoiding costs of managing the system. Formally renouncing responsibility also gels well with the claims about neutrality and not interfering with the natural laws of the market. This stance gives platforms actual control but without accountability. Many of the DLT organisations consulted for this project proudly proclaimed that their community members are in charge of governance and moderation. For example, one respondent told me:

> '…people vote with their [token name], so basically the governance process really… it's like a very long process, right? But it basically starts with discussions on the forum which then also get

> discussed in our weekly governance calls… But the thing is, like, it's only in the final stages where you use your [token name] to vote. So that means that like, the entire initial stage of the governance process, any community member can partake in it.' (Business Development Representative, DeFi company, 2020)

In addition to renouncing responsibility and accountability, this also gives users an inflated sense of importance. Their being used for profit is seen as a team effort that brings benefits to all. Those actually *employed* by the DLT start-up or platform are not seen as benefitting more or having more control than those who have purchased tokens or use the service. In the cases of permissioned DLTs, there are usually some larger investors or stakeholders for the service involved in their development and expansion. There may be some leeway and grace period where growth is allowed ahead of profits, but as screws tighten and economic climates change, the cosy inclusion of community decision making and friendly nudging of behaviour may be some of the first things to go when money needs to be saved. In the case of this previously quoted respondent's company, they let community members nominate and take part in initial stages of new developments or changes to the DLT service, but leave executive decisions up to token holders (which included some well-established banks).

What becomes evident, is that many DLT proponents like the idea of inclusivity because it is not yet a reality. They envisage participation of people who subscribe to their fundamental values, but struggle to imagine any other type of actor. One respondent went so far as to say that they were confident that even speculators with malicious intent eventually will realise the greatness of DLTs and join 'the cause':

> 'I think that they will just like me, you know start for intrinsic [sic] reasons, but as they go along, they go to more conferences, meet the people, the community, things will change. They will convert eventually.' (Chief Partnership Officer, cryptocurrency exchange and asset management company, 2020).

People of other inclinations are invited because they do not pose a threat and because it is perceived that their falling in line and becoming a preferred (rational) community member is only a little education away. Most DLTs and other platform networks, communities and technologies are set up in ways that are effectively closed off to fundamental change by others. The executive branches of their organisations can of course backtrack, but informal practices and barriers are in place to ensure that true alternatives never come to fruition.

The structures are, however, always in flux and regularly re-evaluated through interactions between actors and are sensitive to wider changes in narrative. Despite this, there are clear structural advantages for certain types of actors, typically those who go in with a larger economic investment and have established social networks. Regardless of how many small shareholders/members a DLT platform has, they are never the true winners, or make any of the truly meaningful decisions for the future of the technology. The continuing promise of potential to embody 'the speculator/predictor/winner' is perpetuated within the communities. One respondent stated that their particular community is 'full of brilliant people', who have shown their worth and been voted into executive positions, with the non-decentralised argument that,

> '…the further you go towards complete decentralisation, the more inefficient it will be, so why you simply need to have, kind of like… these different groups of people who can take care of different interests for the [company]…' (Business Development Representative, DeFi company, 2020)

When fostering this type of thinking, there is no focus on the strength of communities working together, but rather that cooperation can reveal who the true geniuses are.

Most economic actors know that winning big is only going to happen to a few, but are enticed by the game, exemplifying the gambling element of speculation. Actors accept that not all players win, but repress the underlying improbability of winning, and even more so the fundamental condition that the only reason that some win is *because* others lose. The possibilities are not equal among possible

outcomes in a capitalist economy, you can only win through exploitation and absorption of other actors' loss. Markets and platforms utilise speculative value to defer this truth to the future, for in the present, everyone is a winner and can cash in on the promises of this particular present's future.

The general public's understanding of economic 'laws' and the workings of speculation is thus not full of resistance, but cheerful acceptance. As Stäheli puts it: 'The popular in the economy, then, is not an external force that directs itself as an anti-capitalist movement against hegemonic economic structures. Rather, the popular is a constitutive element of and for the functioning of the financial system' (Stäheli 2013: 15). Once ideals have been successfully weaved into the general narrative, people wanting to enter a particular market know what is expected of them and they are likely to perform accordingly. Rationality and exploitation of imagined futures are thus not unstoppable corrosive forces in themselves, but a particular perpetuating rhetoric.

Furthermore, Adkins et al. (2020: 26-28) also highlight that this 'democratising' feature of promoting investment markets to the general public historically has had a patchy effect at best. They argue that we are now seeing a temporal lag in the unequal distribution of money and opportunities, particularly for schemes and programmes pushed by governments in countries like the UK, USA and Australia. In the wake of the post-war economic boom, countries were seeing high rates of inflation, but with which the salaries of the average worker was keeping up, thanks to comparatively leftist government policies and a strong presence of unions. Adkins et al. (2020: 28-35) argue that this inflation actually did not hurt the average citizen as much as it hurt those who were holding on to assets and expecting their value to rise. The financialisation (discussed in Chapter 2.4) that started truly taking off at the end of the 1970s and early 1980s was an effect of effective lobbying by these richer segments of society wanting to protect the increase in value of assets, by arguing that the inflationary fiscal policies that followed Keynesianism were hurting investment. To offset the harm that these deregulations actually did to the relative purchase power of worker wages, it was argued that more members of society could be encouraged to get into investing in stocks and other assets,

particularly government bonds, and that the additional income from dividends and selling rising assets would make up for the loss of salary (in real wage terms), while simultaneously stimulate the economy on the production side, rather than the demand side.

As successive financial crises proved this plan difficult, and that the average person over time had less and less surplus money to invest, governments started urging the public even more to get on the ladder of the most fundamental asset – housing. Started already in the era of Thatcher and Reagan, housing prices started to rise as a home now was more an investment than securing a place to live. Adkins et al (2020) argue that inflation did not go away but was merely hidden in the housing market. If housing prices were included in living costs, the gap between wages and CPI would be even wider than it already is in most industrialised economies today.

The biggest issue with the project of making all members of society into investors was (and is) that those who benefitted the most were those who bought their first home in the early days of the schemes, and thus have seen the value of their investment(s) grow continuously for the last 40 years. Rising house prices continue to punish every new generation for merely being born at a later stage of the climbing of the hill. As discussed in Chapters 3-4, we must not see value as tied to any fundamental underlying 'real' economy and that the housing bubble *must* burst eventually due to its high level of disembedding. Instead, we must entertain the idea that housing prices are *made to rise* and *maintained* by our policy choices and collective belief and narratives. There is no incentive for any political entity to lose its voter base that to a large extent is invested in 'getting on the housing ladder'. Adkins et al. (2020), thus argue that there is a generational and temporal wealth gap playing out, where for many the only way to be able to secure this future income source is to inherit property or to rely on borrowing or being gifted money by their parents.

What Adkins et al (2020) have demonstrated is a two-fold issue for the democratisation of finance in general and DLTs in particular in relation to what these policies and ideologies ostensibly tried to achieve: 1. the democratising qualities are small and mainly limited to the first batch to get involved,

and 2. representative democracies that tailor their policies to support the asset as the main driver of the economy are increasingly less oriented to the benefit of the average citizen.

In the first instance, it may have given more financial stability and income to some parts of society that had the opportunity to buy into the schemes early. But, as house prices continue to rise, seemingly indefinitely, there will never be another opportunity to join schemes as good as at the very start of the process. Increasingly, those who do not have access to the wealth of the previous generation will struggle to ever afford to buy property. It is also important to remember that even for those who are able to afford the down payment and are approved for mortgages, the relative costs of living to their income will be much higher than for those who could outright afford all or larger parts of their initial property purchase.

The claims around DLTs follow the same logic to a large extent. Buying into DLTs, whether that is to buy tokens to be part of a particular development community or investment into cryptocurrencies is fundamentally about hoping for an increase in value over time and that this is a good way of getting additional income to a person's wage. This is particularly true for the two archetypes of 'crypto-speculator' and crypto-intermediary', and to some extent the archetype the 'crypto-idealist'. Many of the respondents argued that the average person is not locked out of investment into DLTs like they are in the traditional asset markets. For example,

> 'traditional finance just, you know, it just has like, an inherent bias built into it, right? It's very biased against things such as race, religion, origin, current location, you know, just all of these factors that we as an individual is not responsible for, right?... So when you have something which is arguably one of the most important things [that matter] in your life, such as your financial situation being *shaped*, because of that, then it just creates an incredibly unequal world, right? However, what we really believe in with DeFi is that there needs to be this complete equal access to it, so it's built without any biases: it doesn't matter where you're from, who you are, where you're based, as long as you have an internet connection you can participate

> in this decentralised online community of people and, you know, if you bring assets, it doesn't matter where you are from or where you [got] the assets from, anything like that, you know the assets will have the same value, because if it is the same asset, people will value it in the same way. So, it's really [about] building this completely new system where we really remove the bias from finance and I think that's really, really important, right?' (Business Development Representative, DeFi company, 2020)

Based on views like these, cryptocurrencies and other blockchain backed tokens (such as the currently trending NFTs) are therefore assumed to be more democratic than traditional, regulated markets. But just like the projects discussed above, they are by definition most profitable for those who get on the trend first. This is, of course, if the value development turns out to follow the pattern that is promised by the issuer at all, as there is much less incentive for society to uphold the constant increase in value of cryptocurrencies and other DLT tokens than there is for housing or stock markets.

Like the housing ladder, the inequality between those who already have bought into the asset class and those who have not will continue to increase over time, and for blockchain-backed assets in particular, it is also of great benefit to those who are more technically literate. This means that the information required to make an informed decision is unequally distributed in society and globally. Specialist knowledge is arguably an issue for all asset trading, but it is even more pronounced when technical language and new software is added on top of existing jargon. Furthermore, as discussed in Chapter 2-3, to those who issue, buy early, or make their money from facilitating trade, the future value and sustainability of a DLT asset is not as important in itself as it is a selling point. They are sold with a narrative of being good long-term investments and as safe due to being 'the future', but this is not how the vendors are treating it. Despite being the 'future of money', cryptocurrencies are not *mainly* used as money, but as assets. Most speculators want to sell at a later date, thus converting the value back into a central bank backed fiat currency. Those who trust that a cryptocurrency will

be a good long-term investment stand to lose, if they do not have the same capacity to keep up with the fluctuations in the market as the speculators, or if they do not hold sway in the selling of the narrative to wider society.

Besides being problematic in its claims of including the masses in financial markets, the effects of expanding asset markets thus means that larger asset holders have a larger portion of indirect power in representative democracies, as policies and party programs are written in favour of them as a group. As argued by Adkins et al. (2020) values are being kept higher and the inflation of assets is kept at a steady pace to ensure that assets, and property in particular, does not rapidly lose value. As time passes, it is the heirs of those who already own property that are more likely to be able to afford property and other assets in the future, thus entrenching inequalities between classes across generations. For those who are born to renters or those who rely on their salaried income alone, they not only face more immediate precarity, but over time as well, as they are less likely to inherit or be able to borrow funds from the previous generation. Of course, they do not have any formal disadvantages in democratic engagement as they can vote just like any other citizen, but the problem remains with political focus on saving the assets of the middle classes at the expense of those without assets.

Some respondents have indeed pointed to the unethical skew towards the benefitting of ‘the elite’ among traditional politics, but interestingly not in the way that I have outlined here. Respondents are suggesting that DLTs allow for further democratisation through more widespread ability to buy into cryptocurrencies as assets, even describing it as a route for the average person into the financial markets. For example,

> ‘I think that ICOs can be a great way for you to open investment opportunities to people who are not professionals, and want to invest small amounts. Because if you want to invest through a venture capital fund, well, you can't really invest unless you have millions, nobody will take an

investment of 50, you know 50 bucks. Even 50 thousand would be sometimes a hard, hard sell.' (Ecosystem Director, open source blockchain platform, 2020).

If cryptocurrencies and other DLT tokens are added to the list of markets that get backed by the political establishment, there may of course be a small swathe of new people getting on the ladder, but those who already own other assets and have the disposable income or access to credit to do this in any meaningful way will of course see even bigger benefits. There is also the looming risk of cryptocurrencies and DLT tokens *not* becoming part of the general belief system, which instead sends those who do not have other assets on a dangerous spiral of having gambled what little savings they had, or for some even borrowed money.

In other words, the claims of DLTs as democratising finance through increased participation is the same rhetoric and approach that the liberal political leaders in many countries had with campaigns and schemes from the 1970s and onwards. The uneven access to financial markets and the cementing of housing as assets is the direct result of the faulty assumption that formal access is all that is needed. People were in traditional markets limited by lack of funds, time and knowledge, whereas those who already had larger amounts of resources were at an advantage when these markets were deregulated. To suggest that elitism and uneven favouritism could be remedied by adding deregulated access to cryptocurrencies is to try to solve a problem with its own cause. It is important to note here that in the same way that valuation of money is a social agreement and that cryptocurrencies therefore do not pose an inherent problem to be currency, the central issue here is not that the asset inflation and rising housing prices are inherently bad and/or unsustainable. Instead, it is the approach and the continuous entrenchment of unequal access and unequally distributed benefits of this development that poses issues.

We must acknowledge that these markets depend on the speculations that their value will be higher in the future – in fact the economic stability of several generations now hinges on their homes being both collateral and security in the face of uncertainty. This is an intergenerational game that is kept

afloat continuously, and speculative bubbles do not *have to* come crashing down eventually, as long as societies collectively prioritise keeping them safe. The main question we need to ask is whether we *want to* keep these markets on this steady incline, as it is evidently becoming harder and harder for new participants to take part. This is a particular form of exploitation in which those who live on salaried income alone have vastly different economic lives to those who are 'on the ladders'. This is best described by Adkins et al. (2020: 86-87) and their use of Minsky's 'two-price model' to explain that there is a difference in the processes that determine asset price and consumer price. When anything that is seen as an investment, based on an assumption of increase in value over time (in other words, the imagined futures and speculative value discussed in Chapters 3-4), is kept out of CPI calculations, increase in wages that match other consumption makes it seem as if salaries are kept at even pace with inflation. However, if asset prices are simultaneously rising by several percent every year, this is effectively an inflation that only affects those who do not own any assets, as the only way to keep up with this pace is to hold something that is increasing in value. The idea that crypto markets would be a democratising move that will allow the general public more access to financial markets thus merely mimics the policies initiated in the 1970-80s that lead to the present inequalities in the first place.

Because of the interest of asset holders and politicians alike that this remains the case, we need to shift critique from warning against impending doom to instead warn against the possibility that it will never stop, unless we purposefully change it. For DLTs we must not criticise cryptocurrencies for being baseless assets, but instead warn against the inherent flaws of assuming that formal access to financial markets leads to a democratising trickle-down effect. As discussed throughout the thesis, both these asset policies and the DLT space reflect a general understanding of economies and money that leads to these kinds of assumptions and is another example of why very little changes when they are built on the same operational and narrative structures.

8.3 – Democratisation as emancipation

One of the most important democratic claims around cryptocurrencies and DLTs is the focus on community (elaborated on in Chapter 2.5). A community typically consists of a group of people that share something, such as the place they live, certain values or beliefs or more commonly in our current time, a shared interest. In addition, a community is usually seen as working towards common outcomes or coming together to perform or create something. DLT communities, on the other hand, are temporary congregations that work for the benefit of each individual that has invested into the scheme. They may have common goals and share some values, but these are not essential to the operation of the tasks of the community. This is very telling for how 'democratisation' is perceived and achieved.

If for finance, the democratic element is that more people can take part, and for decentralisation that power is dispersed, then the community aspect is that those who do take part are all in it for the same reasons. However, this is not always the case. Respondents, as well as the financial actors discussed in the Chapter 6, give wide-ranging reasons for being interested in DLTs and cryptocurrencies, or what they hope that the technology will do. This is one of the key features that separates the archetypes. However, the common denominator across most archetypes is the goal to increase value for the host of the service *or* for investors into the various schemes (barring perhaps the disinterested crypto-developer). As discussed in Chapter 2.5, Bauman (2001) has noted that community has come to change its meaning over time. Rather than referring to a group with a common destiny, it is now a loose affiliation that most importantly is temporary. This is linked to the change in perception of one's place as a part of society or a class, to being an individual.

With these changes to the meaning and structure of a 'community' and its relationship to the individual, Bludohrn (2019) argues that emancipation has moved through different stages throughout the 20th century. Emancipation as a goal for class liberation, during the Marxist inspired labour movements of the late 1800s through the early 1900s. Civil rights movements then continued, where the emancipation had moved from concerning entire classes in society, to

subgroups of those who shared struggles. As time moved on, emancipation became the concern for smaller and smaller groups, to the point where we are now not only liberating ourselves from the normative shackles of the previous emancipation movements, but Bludohrn argues that emancipation now is linked to the individual's freedom from societal pressures altogether. This can to some extent be explained to stem from the narrative of multiplicity of norms and truths that has been argued and propagated by post-modernist and post-structuralist social science perspectives, but has taken a turn that is the opposite of the aims of those theories. Whereas the goal of post-modernism and post-structuralism was to reveal the biases of traditional understandings of the world and society, similar arguments are now presented against any and all forms of knowledge as serving the elites. Bludohrn (2019; 2021) argues that with total relativism, critique has no leg to stand on when trying to explain why populist movements are wrong to argue that the establishment is elitist and spreading fake news. However, these things should not be conflated. The questioning of the sources of knowledge and the reasoning behind certain conclusions are not to blame for the success of the alternative facts-driven right-wing populism, but the complete and successful individualisation of societal struggles. Similar to the problem with individualising responsibility for financial outcomes, the responsibility for democratic engagement results in 'movements' and 'communities' that are temporary congregations of individuals that expect that individual profit maximising, or complete separation from society is the end goal of emancipation. Emancipation taken to its extreme reaches a point where there is no longer a subject that can emancipate itself, other than from its own mind. Current movements based on liberal or libertarian values do not seek to help a particular community (in the traditional sense), but see the overarching actual community of society as a whole as a threat to their individual freedom, especially economically.

One example of this from respondents is this statement about the role of central banks,

> 'the central banks want to punish people for saving money, and they want to spur spending. Always. They always want to spur spending by driving these artificially low interest rates, and

> basically punishing people for trying to save money. Making it harder for them to save money, or even penalising them for putting money into the bank. Now you have with negative interest rates, it's fiscal insanity. Fiscal insanity! And you can't just punish all the savers in this whole society forever.' (CTO, blockchain energy company 2, 2020).

Or this other example,

> '…but the fact is [that] a decentralised payment network which has no centralised authority to determine who can send payments to who is absolutely essential, especially in volatile economies, where governments are restricting people's access to money' (CEO, blockchain energy company 1, 2020).

This is also the case for DLTs and cryptocurrency communities. Similar to the misunderstanding of what makes something money, there is a misunderstanding as to what can be the target of emancipation. Just like money cannot exist without the social relationships that uphold their value, there cannot be an individual without society. The 'democratisation' that can be achieved by relocating responsibility and decision making to an automated system that is only serviced by the votes of token-holders is alienation of the member of society from society. The individual is not liberated but removed, in favour of an automated reality that serves the purpose coded into the system.

As argued earlier in this thesis, there is very little that can change the course of how a DLT operates on a fundamental level (unless you control development), unlike with representational democracy in a state. A parliament can vote to change the rules of voting, but this is rarely considered as an option by DLT proponents. It is assumed that they all share the same vision, or it is not even considered that the underlying rules could be changed, so the fundamental democratic principle of having the system serve the people is removed. The flaw that many respondents see in the traditional national democratic systems of for example USA and the UK, is not only replicated but enhanced in these DLT

solutions, as their votes *really* can only verify, deny or approve what is being proposed. The only way to make new suggestions is to write code.

The narrative that the DLT proponents are continuing in this instance is once again one of inevitability and of ceaseless progress. It latches onto the wider understanding of the 'end of history' or 'post-politics', as if the one true way of having a society is already decided and that our present role is merely tweaking it and ironing out the creases. It is to many respondents a fine balance between arguing for disruption of the archaic on the one hand, and on the other suggest that DLTs are just a small step along the path of economic and technological development.

This is sometimes referred to as the 'post-democratic' turn, which sees the population as a whole as having given up on democratic change in apathetic acceptance of the 'end of history'.

As discussed in Chapter 2, Bluhdorn and Butzlaff (2020) argue that similar to the changes to emancipation, we are not facing post-democracy, but a new form of democratic engagement. The 'end of history' narrative is contrasted by actual continuous political debate and engagement but not in the previously seen clashes between classes or calls for more participation. In particular, what is different to current trends in democratic engagement is a reduction of deliberation in favour of groups for various causes calling for immediate action, appealing to the urgency and accuracy of their claims as self-evident (Bluhdorn and Butzlaff 2020). However, this speaks to an anti-human, common-sense understanding of what science means and does – something that once it is established comes to act as an unquestioned truth. For DLTs, similar goals are set for the technology to bypass deliberation or human interference – as something above the democratic process. The difference, however, is that with climate politics, the sense of urgency stems from the crisis being unavoidable and that we have let the political and economic order take too long to come to an agreement. The reason for bypassing democratic processes is that they see the problem as too imminent. With DLTs, however this is more of a problematic position, as it argues that DLTs *enable* democratic engagement while simultaneously wanting to bypass democratic deliberation and

interference in the establishment of these systems. It is not out of an urgency of the same magnitude as climate collapse, but rather 'human nature' in general that is seen as in the way of true democratic processes.

As previously discussed, this is a result of a combination of neoliberal thinking, consumer culture, digital developments and behavioural economics, which together have created new understandings and forms of participation, which result in responsilibitsation of consumers, allows private company data-mining to inform policy, and a policing of individuals' behaviour 'guided by choice architects aiming to correct erroneous beliefs of citizens about their true best interest' (Bluhdorn and Butzlaff 2020: 371). This development of placing responsibility on the individual is similar to the themes raised in Chapter 3, where I chronicled the shift in responsibility of economic success. What we are seeing is thus the dominant narratives about human organisation having an effect on the totality of the individual in society. Economic developments driven by particular societal structures and ideologies lead to increased inequality, but for which responsibility is internalised by the individual. What is highlighted here is that in addition, these individuals are further made responsible for this economic and political order as if it is a result of their lacking action through consumer choices.

These parallel developments thus work to make the individual believe that they are responsible for change through consumer choices, but simultaneously, their possible choices are being engineered through the use of big data. It is much less a matter of businesses having to listen to what their consumers want, than it is a matter of users choosing what they are supposed to. In addition to our earlier discussion of how tech platforms in general try to steer consumers into closed circuits, Jankovic and Bowman (2014) also demonstrate that businesses only are interested in pursuing socially and morally driven pursuits (in their example concerning action on climate change) as long as they are profitable, which means that even smaller shifts in public opinion may change course for these movements. Bluhdorn and Butzlaff (2020) argue that the change goes 'beyond the autonomous subject and mature citizen' in what is called the post-democratic turn.

DLT-based notions of democracy sit comfortably in the same ideological ecosystem as the declarations and calls for the 'post-politics' or 'post-democracy'. As with the promises of what the technology will do in general, the uses for democratisation are also left vague and ill-defined. It is often assumed that putting a *non-political* platform in place of inefficient current democratic systems will enable users to directly engage with questions that concern them. The promise is based on the assumption that the declarations of the 'end of history' are true and already in place. It assumes that the economic order that is the best of worlds is attainable with the help of this technology, so the implementation of the technology or its shape is left outside of public debate.

Within the different communities, there is of course varying degrees of user influence on the future of a particular platform, but this is usually limited to technical features, such as block sizes, or to fork the code to save face after a hack. The type of fundamental solution is chosen in advance, and typically does not include the community. One panellist at the CCDAS event argued that it is more efficient to make something first, behind closed doors, to see that it works and then release it to the public to participate (DeFi company representative, 2020). This means that the workings of the system is outside of democratic engagement, precisely because the creators do not see the technology as part of a political project, or because they deliberately wish to keep this part within their own control. In the cases where they delegate different elements of the technology to particular uses, that may be elected by the community, they are in effect recreating representative democracy, but with one major difference. In constitutional democracies, there is even a way of changing or amending the building blocks of the democratic system, albeit with multiple levels of safeguards, such as requiring a higher majority from two separate parliaments, etc. This means that the understanding of democracy is one of direct engagement with other users, but only over the day-to-day running of the system, much more akin to shareholders or boards of directors than a citizen.

As I have argued throughout this thesis, there was never a point where the social or political was lost or removed, but rather it may have been withdrawn from public light. As Bluhdorn and Butzlaff (2020) argue, the end is more a reduced influence of a particular form of politics, one that was oriented towards promising a future utopia and which saw fundamentally different societal systems. This has been replaced by a consensus on the fundamental tenets of society, that does not promise any liberation or massive overhaul, but only careful incremental improvement by staying on course and doing the necessary sacrifices along the way, such as austerity to maintain GDP growth and reduce government deficits.

What this means for the democratising potential of DLTs is that the vision of democracy that is being touted by DLT supporters is a vaguely defined, direct/participatory democratic model, but which due to being grounded in the neoliberal consensus about what is possible and desirable to change largely recreates the current non-democratic forces that guide people to accept the central role of economic development continuing on its current trajectory. This is further exacerbated by the denial of political or ideological influences on technology, and the goals and ideas of those who design and build the systems.

The criticism from DLT supporters, that finance is exclusionary, manipulative and corrupt does not extend to the structure itself, but to the behaviour of those involved. Deliberation, manipulation and any other wiggle-room within the system is to be removed through the use of DLT to enable this imagined participatory democracy that will have very little left to discuss or vote on, other than the management and running of the technology itself.

What is missing, is how these views are situated in wider development on democratic questions in society, and how visions of community and democratic engagement have changed even outside of the neoliberal consensus about the post-political era.

As a part of the establishment of neoliberal consensus about the neutral necessity of the market forces as drivers of societal development, social movements have also increasingly shifted towards

serving the individual. Emancipatory movements in the early 1900s were centred around class, and successive movements around smaller particular groups in society. The emancipatory element was to widen the influence to include those who were previously kept out – it was an inclusive project that sought to change fundamental structures. Subsequent and more recent movements have on occasion even challenged the non-inclusiveness of previous movements, but which still were moving towards a better society, or better collective outcomes. However, with each step, the group concerned has become smaller and smaller and the focus of the outcome has moved from a collective better society to the individual's right to not conform. An inclusive society as a goal has been replaced by a society that does not interfere. In this sense, many emancipatory and democratic movements on the right and the left agree with the neoliberal consensus in that the fundamental structures should remain in place and that the individual subject is the correct endpoint and final product of societal development.

Emancipation as a concept will therefore arguably always have one more step beyond the current configuration, to the extent that the only thing left to emancipate is the individual from the collective on all levels. Similar to the post-political definitions of democratisation that is demonstrated by the right-wing's distrust in the political elite and the climate protesters scientific-based stance, a common theme among DLT supporters seems to be to conceptualise the end goal of democratisation as a dislodging of relying on society at all. It is because of this that DLTs often are labelled as reflecting libertarian values, but at closer inspection, this is also the dominant neoliberal presentation of the responsible consumer/individual.

8.4 – Neoliberal emancipation as sustaining global inequality

As demonstrated earlier in this chapter, the role of decentralisation is a contested issue and how it relates to democratisation depends on who it is supposed to increase rights and freedom for. For those who assume that regulation will be in place and that it will enable transparency and choice to consumers and citizens have rarely considered the role that money and investment play in shaping the outcomes and what forms of technology that become popular. More specifically, as discussed in

Chapter 3, I established that large investments have a constitutive rather than passive role in economic activity and therefore become self-fulfilling prophecies.

On the topic of who blockchains will be most beneficial for, and if there are groups in society that will be left out or would face barriers of access, the respondents of this thesis often began by appealing to the benefits of decentralisation. Several of the respondents said that one of the most important aspects of why they are working with these projects is that it will help those who are being left out by current financial and societal structures. One respondent focused on how having access to stable cryptocurrencies (in this case a stablecoin) was crucial to many people in countries with volatile domestic markets and wildly fluctuating national currencies,

> 'I really don't think people should be dependent on their local financial system, and local regulators and local government, for them having, you know, a good life. And that's unfortunately a state that we see in the world a lot today and that is really the paradigm that we wanna fight, right? We want to give people an alternative… so for example in like… four months we have scaled up an operation where right now we do around five million dollars per week in [cryptocurrency], peer-to-peer with [thousands of] active users, and this is all people who just want to escape the local [country name] system, right? And this is where it… this is where the importance of what we are doing really shines through, because now all of these people they have an alternative because of us.' (Business Development Representative, DeFi company, 2020)

However, when considering issues around limited access due to the need for technical knowledge and the centralising tendencies of many current implementations, two things need to be considered. Firstly, options of using international cryptocurrencies to circumvent unstable local economies means that money that would normally be in circulation in the fiat currency is now outside of the domestic market, potentially weakening the chances of stabilising even further. This company is moving millions of dollars out of this country, for the benefit of only their users, a particular type of person and which only represent a fraction of the country's population. Furthermore, because of the

barriers mentioned, it is unlikely that those with little to no capital are the ones who will utilise this opportunity to move their assets out of the country. What these benefits offer are instead more independent control for those who have assets, while leaving most people out.

Secondly, for projects that implement blockchain solutions into markets and developments where the end users have no option but to accept the changes, the perceived benefits are more akin to charity than inclusive and democratic opportunities.

For example, ideas about using blockchain for airdrops requires individuals to want to send money to recipients, instead of centrally mandated welfare. The recipients of the benefits of airdrops are at the mercy of donors' willingness to share. Another example includes one company's plan to pair with housing developments and supply solar panels, as well as the infrastructure for energy and household data measurement. The respondent presented the business as helping society, as they will target low-income areas and offer residents money up front in exchange for their household data. However, the respondent also highlights how this is a fledgling lucrative business opportunity,

> 'So we can go to people and give them say seven or eight hundred dollars, upfront! We're not talking about cashback, we're talking about upfront money in their pocket. Um, they just give us access to their data, their energy bill and their home performance datasets, you know, and also potentially more data that they are willing to share. You know, we can take that data and make it available to contractors, auditors, DER [Distributed Energy Resources] programmes, you know, all sorts of downstream… data analytics companies, and there's the whole data ecosystem. Once this info starts flowing, it's like a whole ecosystem will form below us. Below us. You know, we could be turning on the spigot for the data for a whole billion-dollar industry… the people get basically a discount on their mortgage and if they sign that they are willing to share this data with us they'll be able to get, what for a low income person, 800 dollars a year is like a big deal… You know, we want the community to own [the solar panels] and we can even give back not just monetary rewards back in terms of cash… but they [can] have like a credit phone card that they

> get within this low-income community, or buying like a fleet of solar powered cars, and offering like free rides to the members of the community as one of the benefits, you know?' (CTO, blockchain energy company 2, 2020).

What is not raised is that this business model only works as long as companies are interested in continued collection of this type of data for advertising and content/service personalisation perspectives. The DLT company will therefore likely have to begin charging for the use of their meters and DLT infrastructure if the selling of data becomes less lucrative. At this hypothetical point, the housing development and the energy company that have paired up with this DLT start-up would have a very difficult and expensive time replacing this system in the case of the start-up going under.

In all of these cases, it is clear that benefits are *given* to people, rather than involving communities in the decision making, sharing the profits, or even deciding on what 'benefits' should be available. These themes, where the public is portrayed as a passive recipient of the genius solutions that tech entrepreneurs bestow upon them will be discussed further in Chapter 9.

Together with attitudes to human interference in markets, voting systems and the perceived irrationality of people, these themes all signal an anti-humanist stance that claims to want to enable a fairer and more equal society. However, the paradoxes highlighted earlier, where these sentiments are coupled with acknowledgement that a few people, such as coders, investors or project leaders still have more influence than others, points to an actual stance that prefers their in-group to have executive control, as they are more suited to decide what will be good for the masses. The average person just doesn't know what is best for them.

The views reflected in these discussions of democratic visions and assumptions about modernisation are sometimes argued to only reflect a 'western' perspective, and if we consider particular developments and experiences of each community, this is probably the case. However, because DLTs are meant to be the same regardless of where you are in the world, I would here also like to suggest that rather than viewing these discussions on changes to economic and political systems

being isolated developments in what is usually considered 'the west', (and which some argue then was 'exported' as a new economic and social order to other parts of the world) both industrialisation and the growth of the economies of 'the west' was always dependent on the extraction of resources, skills and physical bodies from the areas that were colonised (Bhambra, 2021). For example, in the case of the UK, the rise to world power from the mid-1800s was dependent not only on the wealth that was taken from India and the other colonies, but the industrialisation process was made possible by the copying of techniques and technology already present in India's cotton industry. Furthermore, the demand for UK cloth had to be manufactured, by destroying tools and physically harming weavers and tailors in India.

Similar to how economic crises should not be framed as temporary and exogenous shocks to an otherwise stable normality, we must also consider that all parties connected in the industrialisation/modernisation project were essential to that particular configuration. It is also similar to how Bluhdorn and Butzlaff (2020) argue that the autocratic wave, which shares anti-human assumptions about the end of history, are not merely bumps in the road along the trajectory of inevitable democratisation through modernisation. In other words, the way of engaging democratically in society is constantly changing, but is also related to all parts that it is made up of. The way a particular system operates requires the relational work of defining, redefining (or reifying) and performing the rules of action, but for which the power to do so is unequally distributed according to the economic, social and cultural capital of the actors. On a global level, this is of course also reflected in that all parts of the globe are connected economically and therefore also socially. The modernity that emerged was dependent on the global phenomenon of colonisation and imperialism, and thus already global. The rules of the game and the requirements were therefore not created from western conditions, but took the shape they did because they served western interests. I will therefore refrain from prefacing these arguments with being based on the western experience, and instead acknowledge that the social and economic development that is usually seen as 'western modernisation' was always a global process but for the benefit of people in the west. In

the same way that responsibility for inequality has been individualised, so has responsibility of global inequality been placed on the leadership of each country within this global and unequal structure. Poor countries around the world are not poor because they fail to adopt the successful values and policies that work in the west, but because the economic growth of the west depends on the poorer nations remaining poor. This is of course not a fundamental and necessary dependency, but one which is assumed to be part of the global markets' equilibrium and ultimately caused by choices on the level of individual nations.

Among respondents, a common claim to virtue (sometimes expressed as directly related to me being a sociologist) was that DLTs will help those individuals that are stuck under these incompetent governments by offering a direct line to the financial freedom that we discussed towards the start of this chapter.

Because this notion hinges upon the assumption that it is indeed the fault of the local governments that there are poor residents within their borders, so does the poorly grounded conclusion that the best solution is emancipation from their societies altogether lead to wrongfully assumed consequences. The promises associated with DLTs to overcome these barriers and democratise regardless of nationality and background may seem like an internationalisation of a cooperative or collective, but instead gives those with financial and technological savvy prongs into all parts of the world where people take part.

A good example of this is the newly launched project Akoin (2020), created in part by the musician Akon, with the ostensible goal of unlocking entrepreneurialism in Africa that is being held back by bad governance. The vision they present predicts entire physical communities building their economies on the Akoin cryptocurrency and in which local entrepreneurs are given the opportunity to launch businesses and thrive. What is practically offered, though, is for international companies and investors to access markets around Africa, but circumventing local legislators. This highlights a constant struggle between words about democratisation in terms of getting access, but which

simultaneously removes democratic say over the process from the people around them in the countries they reside. If international investors use Akoin to invest directly, and potentially tax free, into local businesses in for example South Africa, the elected government of South Africa loses influence over that part of their society. The money that is paid to these investors (because they will require profits to be paid as returns) leaves the country and the local community. Effectively, it will make individual entrepreneurs better off, but their communities poorer.

Because of this selling of the possibility of individual economic prosperity, DLTs are growing in popularity around the globe. But, because of where the investment is coming from, the direct lines into poorer communities seem to resemble imperialism or even colonialism more than financial opportunity. There are, of course, richer segments of these countries that will benefit from the cash injection, but likely not the average citizen. Similar to the issue with assets discussed at the start of the chapter, DLTs will benefit those who already have assets on an international and global-economic scale as well. It will assist in the already ubiquitous siphoning of money from the world's poorest countries to the richest. Even without these direct claws into local markets, the 'global south' is already losing $2 trillion to the 'global north' every year (based on figures from 2012) (Hickel 2017), for a calculated total of $152 trillion lost for the world's poorer countries since 1960, as of 2021 (Hickel, Sullivan and Zoomkawala 2021).

8.5 Conclusion

This chapter has discussed claims of democratisation from respondents and connected them to what foundations these claims rely on, in particular their connection to values of economic liberalisation, decentralisation of decision making and goals of emancipating the individual from perceived biases and pressures of society. I have argued that assumptions about the neutrality of markets and technology, such as those raised in Chapters 2-4 and discussed in Chapter 7, lead to views of democratisation as equal to individualisation of opportunity, which also leads to individualisation of responsibility for events that in reality are outside of individual control. The democratic ideals presented are likely to fail to be inclusive due to barriers such as the need for technical knowledge,

starting capital and experience with finance and investment. Furthermore, I have argued that these assumptions about the relationship between deregulation, liberalisation and idealised outcomes such as direct democracy only represent a narrow definition of what democratic means. These views also fail to realise the importance of economic, cultural and social capital in general, and the steering role of influential people in society. As performative, relational and generally social interactions will always be present, neither markets nor DLTs can ever be neutral and the perceived democratisation will not be realised in the way they imagine, either.

Due to the centralising tendencies identified within the platform economy, decentralisation also becomes more useful as part of a sales narrative, rather than guide how the organisations operate. As with the democratic ideals raised above, this also means that in addition to decentralisation not automatically equating to democratic engagement, actual decentralisation is rare within the DLT space.

This chapter has thus served to analyse central elements of all four research questions. I have addressed how democracy is conceptualised among respondents and related these to wider developments raised in the literature review. I have discussed different attitudes as related to the four archetypes, and provided an understanding of the implications of particular claims as compared to outcomes from a sociological perspective. This chapter thus contributes to our broader understanding of the role that DLTs can play in democratising finance: mainly a vehicle for small groups of economic actors to take control over deregulated spaces in favour of an individualised image of what ‘democratic’ means and which inadvertently or intentionally act to entrench global inequality.

Chapter 9 - Humanism

In the previous chapter, I discussed how problems with democracy, like markets, are portrayed as stemming from human behaviours that go against a perceived ideal situation. *True* democracy is prevented by the greed and corruption of politicians and the elite, just like *true* market equilibrium is prevented by actors cheating the system. The tenet that supports both of these claims is that the obstacle to have perfect institutions are humans themselves. In other words, the *social* institutions that humans have built and the models they keep making to predict the outcomes of people's interaction with these institutions are failing because they are full of humans – human behaviour fails to conform to the models, ideas and ideals set by those who promote these narratives.

This chapter will therefore focus on the *anti-humanism* of DLT technology, companies and their communities, rather than humanism. As with Chapters 7-8, theoretical claims and assumptions will be tied in with findings, and I will give examples of how different approaches correspond with different archetypes. All four research questions are once again approached in a similar way, but I will here provide the final pieces to answer each of these questions.

Despite being presented as vehicles for the fulfilment of collaboration, co-creation and intermediary-free interaction, the problem formulation that DLTs are built around reflect a negative view of being human. It is implied that any situation involving humans will be taken advantage of by the people involved unless they are kept in check or prevented from acting in bad faith. This is of course simultaneously at odds with the claims that equilibrium is automatic and delivers the fairest outcomes due to the competition between the aspirations of all the actors. In many ways these things do not have to be mutually exclusive – of course you can assume that there is equilibrium between actors if they all share the same selfish goals, opportunities and skill (it would be problematic, but let us entertain the assumption) and at the same time say that these actors would do anything to win, including cheat the system, use loopholes and act in bad faith. Therefore, this becomes more about what types of behaviours that are deemed fit to delimit. DLTs are not designed

to address problems with having systems that fundamentally reward egoistic and self-interested behaviour, only the opportunity to take advantage of the systems. It does not appear to have occurred to many that the people who claim that everyone is acting in bad faith typically are the very people that would. The people who claim that humans are tribalist and want to compete and win at any cost are the same people that demonstrate this behaviour. I interpret this as an anti-humanist element, which not only assumes that others *also* would cheat if they could, but also a negation of the possibility that people exist who would not act in bad faith.

This chapter, like the previous two, is divided into subchapters that each consider different aspects of the overarching theme. The first subchapter addresses the concept of 'community' and its popularity in the DLT space, despite a lack of clarity as to what it means. This subchapter is followed by a discussion on how belief in the inevitability of markets and technological development leads to a branding of alternative views as uneducated. The subsequent subchapter takes this further and critiques notions that this perceived inevitability has to be safeguarded against irrationality, and what this may do to the possibility of opposition. The final subchapter extends this even further and analyses the paradoxical relationship between simultaneous belief in individual agency and in fatalistic inevitability, through a discussion of a limitation to agency that DLTs tend to embody.

9.1 – Community

In the previous chapter, the ideas about democracy that were discussed stem from our current dominant understanding of what democratic engagement looks like and who the subjects are. The shape of dominant understandings largely is the result of ideas of modernity, progression and rationality and these ideas have continued to develop through industrialisation and its placement of the capable, responsible individual at the centre of society, accompanied by the ascension of the economically successful financial actors as the de facto ruling class of society. Furthermore, as discussed in Chapter 2, Bluhdorn and Deflorian (2021) argue that some reactions and protests to the financial crisis of 2007/08 seemed to signify a renewed calling for democratisation and against the unsustainability of the current systems, but also a change to how this is expressed and a rise in right-

wing authoritarianism. They raise that the way some political debates are framed, scientific facts are presented as non-negotiable, neutral and depoliticised and therefore also free from faults. This places incremental societal change on what is seemingly a depoliticised continuum of progress, and which is used to support dismissal of calls for fundamental systematic change, or even asking for further evidence of the soundness of these ostensibly 'natural' developments. For better or worse, this creates a difficult situation for how to interpret and evaluate the claims of democratisation that are associated with DLTs. In one way, it appeals to distrust in established systems, particularly in finance and fiscal policy, but also concerning how governments around the world deal with their citizens. The way it is framed seems to reflect a frustration with the slowness and stubbornness of 'the establishment' and that it is kept intact to serve *the political elite* that benefits from corruption on all levels. On the other hand, referring to technological solutions as a way of overcoming these issues and taking matters into their own hands is a way of shutting down the potential debate and democratic engagement that *should* be involved in these situations. What is achieved is a replacement of what is seen as an oligarchic and authoritarian system with an equally authoritarian, automatised DLT system.

This closing of deliberative democratic engagement is related to the changes in definition of what is considered to be one's own community. As I argued in Chapter 2, Bauman (2001) suggests that communities have shifted from being based on proximity to global, due to the rise of digital communication. Community is best viewed as an ideal state and a representation for a compromise in favour of security, which leads to the drawing of boundaries for what is inside and outside the community. Interestingly, the DLT communities are meant to be about freedom and emancipation, which is in line with the dominant consensus, but the implicit rules for goals and ways of thinking are also in line with Bauman's discussion of community here. This is because despite claiming that anyone can become a member, there are several barriers to access both economic, social and cultural. This differentiation does however make sense of the shift in emancipatory movements from a reshaping of society to something that is perceived to benefit all, i.e. a sacrifice of freedom in

exchange for security and equality, to something that wants to sacrifice security in exchange for individual emancipation from the configurations that seek equality.

In our present time, identity has become a surrogate for the community that can never happen. What could have been framed as social justice, often becomes calls for opportunities for self-realisation. As the neoliberal project has undermined economic equality and nationalists point to globalisation and/or leftist elite values as the reason the imagined local communities have 'been lost', identity and individual emancipation are all that remain. This is why DLT promises of democratisation are not about changing society in the direction of a utopia, but instead based on believing that we already have utopia within our grasp if each individual is emancipated from the shackles of society.

This renders DLT communities as temporary congregations of individuals that are all seeking profit, or seeking to control a certain technological function, rather than what Bauman describes as a community. The one thing they do share with a community is the demarcation of boundaries. As discussed in Chapter 3, there is a simultaneous exclusion of those who *behave* in the wrong way that accompanies the language of inclusion. By arguing that only individuals with particular skills and insights will be able to understand the opportunities that are available, even taking part in the community is an individualised choice, and not something that is automatically awarded to those it concerns. DLT communities are not trying to be inclusive pre-emptively like a social movement typically is – they are only expecting each member to fight for themselves, and through this individual appeal they hope to have enough traction to change the minds of legislators and institutions. This gives DLT communities the same drawbacks that accompanies cooperatives, in that it is only those with the time, money and knowledge of its existence that are able to (and meant to) get a share of the benefits. But unlike a cooperative, which usually seeks to be an alternative to buying goods or services from a corporation, and in which members can help each other out, DLT

enthusiasts simultaneously suggest that DLTs can be used to broaden the 'democratising' reach to any- and everyone.

The problem becomes the same as the individualised society at large, that it mainly benefits those who are already well off, such as with the failed attempts with financial inclusion (Adkins et al. 2020), and as Bauman (2001: 58-59) suggests, those who are most able to emancipate themselves are the elites, who have economic, social and cultural advantages that give them more opportunities but who still argue that their success comes from merit, and that it is up to the individual to demonstrate their brilliance, despite 'society trying to hold them back'.

But, at the same time, for DLT supporters who otherwise adhere to the individualised responsibility and neoliberal view of the subject, much of rhetoric revolves around proclaiming that only those who realise the true value in a cryptocurrency or technical solution will see the benefits.

The people surrounding a particular DLT can therefore in some respects resemble a close-knitted community based on the image of shared values and goals. However, the main difference between a DLT community and one that fits with Bauman's description is that the common motivator does not go beyond increasing use and/or value of the product they congregate around. For example, the commitment to the cause may stop completely for a crypto-speculator that has sold the tokens they were holding once the price went up. It is for the increase in value of all coins that the multitude of smaller 'communities' are referred to by DLT supporters as also belonging to one big community. A fitting metaphor is perhaps if players around a blackjack table in a casino would start referring to themselves as a community for those who see the profit potential in the game, but that they also consider themselves to be part of a larger community of gamblers that includes several other communities of slot machine users and roulette players.

The shift from society-wide and utopia-based calls for change to one that focuses on the individual makes us only see it as possible to compare injustice to others around us rather than our collective situation compared to what it could be (Bauman 2001: 80-81). Improvement becomes a

consumption issue and ‘a good life’ whatever is comparable to others, rather than an identifying and combatting of the processes that seem to lead to undesirable outcomes. The achievements of unions around the world of improving the conditions of all workers would not be possible with the individualised negotiations that are standard today. This is yet another problem with the DLT model of democratic engagement, especially in the networks that are anonymised and which only allow for votes through the use of tokens. Users are of course able to discuss and try to amass a following, but there is no way of pressurising the management or running of a chain unless a majority of users is amassed or if those most influential are seen as on board.

DLT ‘communities’ may look like communities in some respect, and the exclusionary nature does often include sharp rules for what values are acceptable. In other ways, members may also be viewed as constituting ‘speculative communities’ (Komporozos-Athanasiou 2022: 10-12, 30-38), embodying a placed ‘bet’ on DLTs as the future and bolstered by a need to belong to the winning side in order to improve their situation in life. But, regardless of whether the members are part of a DLT community for profit or out of desperation, these are crucially not lasting communities, but vessels of individualised, market-based profit seeking. DLT communities as emancipation movements have replaced goals of improving society for all, or even a particular group, with goals of separating the individual from society, which is seen as the natural step on the road toward freedom and democratic engagement by individual choice.

9.2 – The uneducated general public

In Chapter 7, I discussed ideas about the inevitability of technological development, with respondents referring to it as the ‘next step in our social evolution’ (CEO, blockchain energy company 1, 2020). In line with these claims, respondents have predicted that ‘the securities markets will become blockchain markets, and securities… instead of having a bond on a piece of paper that you print out it’s gonna be a token.’ (CTO, blockchain energy company 2, 2020), and that just like stock market trading has,

> '…gone from the pit, to a desktop… this whole financial industry will go from desktop to mobile. It's, I mean, already smart banking is huge, on mobile. Uh, investments and wealth management will also become mobile because, you know, um technical analysis and trading will be all automated by bots in the future. You'll have very few traders, so in order to follow this trend of the future, uh, these guys need to catch up with getting good infrastructure for internet, and getting more access to smartphones, or even a mobile phone.' ((Chief Partnership Officer, cryptocurrency exchange and asset management company, 2020).

Blockchain is presented as an inevitable next step on a continuum, but as discussed in Chapter 7, there are particular interests involved in bringing this future into fruition. When any flaw with blockchain solutions were brought up or acknowledged in interviews, respondents would usually have one of two lines of responses, 1. That the technology is still new, and that these are all still experiments. Any problem will be worked out in time; or 2. That the general public, governments or existing environments are too backward or uneducated to realise the potential.

The first line of response was often used to address technical flaws. Despite having earlier argued that everything is ready to go and that there is no need to doubt the integrity of a blockchain system, potential flaws are due to it still being in development and that a few teething issues are to be expected,

> '[in comparison] …if I remember the first time I had to use online payments, I nearly had a nervous breakdown, I thought it was going to take my money or the world would see my money or you know…there were mistakes made in protocols but it's all gonna get ironed out. These are the early experiments' (Software developer, blockchain badge and certificate solutions, 2020).

The second line of responses were typically tied to questions concerning adoption and reservations about whether to trust blockchain solutions over traditional institutions. Several respondents raised the adoption curve model, as seen in this straight forward answer given by one respondent,

> '…the first guys were the tech geeks, right? It's always like that… when we had the first cars, a lot of the business men thought the car will never replace a horse, right, that's… It's a good joke, right? But the tech guys knew that the car would replace the horse, that we wouldn't have a carriage anymore. And same for the telephone, all the intellectual scholars thought the telephone would be irrelevant. Um, and look at where we are now, right? And the tech guys understood that it was relevant.
>
> So, that, by nature when it comes to technology, the tech people will always be the early adopters. Because they're just, they're technical, right?... By nature, in terms of the adoption curve, we are looking at crossing the chasm now, which you probably know is a very famous book, the early adopters are a combination of tech guys and libertarians, right? Now we are starting to see people in finance, because they also understand. They are not as quick as the tech guys, but they are understanding the economic incentives and advantages it has, financial advantages. …and then the average person… that's really how it will progress, you know. Those enthusiasts, or innovators, or evangelists which were the tech libertarians, the early adopters, the finance guys, and then, yeah, the average person. The government is always slow, so the government would be at the end of the spectrum, they would be the laggards, as we call them.' (Chief partnership officer, cryptocurrency exchange and asset management company, 2020).

To the respondents, anyone outside the initiated circle is presented as either going to realise the potential at a later stage as the progress along the adoption curve continues, or they are part of the traditional institutions that would prefer things to remain as they are, as it benefits them. Simultaneously, however, they see adoption of blockchain solutions by the general public as somewhat dependent on it being recommended by governments, suggesting that the trust in blockchain will be secondary to trusting the institutions that use them,

> 'For us to cross the chasm, it's still gonna take a little bit of time. I do think that if the governments start using CBDCs [Central Bank Digital Currency], that's gonna accelerate the

> process so fast. Because if the government is saying "download this digital wallet, we're gonna send a token and then you will be able to send that digital dollar to a friend". "This is so cool, I don't need to wait…, you know, if my bank is closed on a weekend, I can still send my money, it costs me nothing, it's instant." So mass adoption will definitely take time, but that could be a huge catalyst.' (Chief partnership officer, cryptocurrency exchange and asset management company, 2020).

The role that statements like those discussed above play is effectively invalidating experiences and opinions that go against perceived inevitability, thus reflecting anti-human and homogenising values. In addition to specific DLT solutions making human interaction more rigid, there seems to be a desire to silence diverging attitudes towards the technology itself. Different views are approached with contempt or ridicule, and the assumption that DLTs being on the right side of history is once again tied to the pushing of responsibility onto the individual. Clear lines are drawn between 'us', who understand the value of DLTs, and 'them' the ill-informed and uneducated. This is once again also reflecting assumptions about knowability, certainty and predictability which aligns with an instrumental view of the individual. Almost paradoxically, the view of the individual as driven by predictable self-interested goals, reduces a person to the acting out of inevitable events, which in turn reduces agency, a topic which will be discussed later in this chapter (Chapter 9.5).

9.3 – Removing humans or removing opposition?

As I have discussed throughout this thesis, it is not possible to remove human influence regardless of what technological solution that has been devised. As demonstrated, it matters who writes the code, who chooses what solutions to use and what processes are used to decide on these matters. The humans that are imagined to be removed are those that could hurt the interest of those who are in charge of the platform or technical solution. Most often, this was expressed by the respondents as an uneducated public that would *mistakenly* use markets in the wrong way. As discussed in Chapter 3, this reflects the position that anyone technically could be a 'speculator' but not everyone will. Certain knowledge is required to excel and this, in tandem with other unspoken

criteria of correct behaviour, keeps most people out of the opportunity to become this idealised type of human that can seize the means of speculative income.

Because of this combined stance that DLTs are more inclusive and will give opportunities to the common person, but simultaneously that the common people are too bad at finance to be allowed to take part with their *irrational* ways, the outcome is a highly selective process that does in practice require not only skills and knowledge but the correct attitude to finance and money to be deemed fit for purpose. The way that this is policed is hardwired into the code, so that no irrational behaviour can be allowed. A second type of human that needs to be kept out is the malicious actor, who tries in every way to cheat the system. Ironically, this type of person is described as acting in accordance with *human nature*. DLT supporters thus see it as important to create automated processes that would keep others from doing what they themselves would do if they could.

Interestingly, the only barrier that upholds this is the remaining collective of users that expel bad actors through voting, or simply just do not vote in suggestions from these bad actors. It therefore becomes evident that the belief is that all actors are only upholding the rules because they have something to lose if the system was to be compromised, namely their own investment. This, in turn, suggests that the only reason for anyone to uphold an agreement is if they 'have skin in the game'.

This view reduces human interaction to a very basic and transactional form that quite clearly aligns with the 'barter' understanding of money. From this perspective, where the only reason that money exists is so that an actor can more easily overcome the problem of double coincidence, there is a perceived need for clear incentives to participate in the system. As expressed by one respondent, the problem with traditional systems is that the incentives to cheat outweigh the incentives to act 'rationally' (as seen on pages 172-173). This demonstrates two simultaneous but opposing views of people. In one way, people would act more rationally if they had the right incentives, which would suggest that people tend to be selfish, but at least *can* follow the desired behaviours under certain circumstances. In a second way, however, the incentives are to be hardcoded in, actually leaving no

room at all for undesirable behaviour. In both ways, it is the designer of the market or DLT that decides what the desirable behaviour is, and which, as discussed in the previous chapter, is kept outside of public deliberation. It seems to be assumed that it is evident what form of organisation is optimal: the 'post-political', 'end-of-history'-based free market equilibrium and it is therefore not important to involve humans in setting up the technology around these foundations.

Throughout this thesis so far I have raised the issue with presupposing that there is any such thing as non-political organisation or such a thing as neutral technological solutions. As demonstrated, these assumptions seem to inform every aspect of DLT companies and markets, in the search for what can be done to uphold the mantras of rationality and emancipation from societal control. I have demonstrated that words often ring empty against the utopian promises of fairness and democratisation and that there always seem to be goals of profit-making behind the façades that are driving particular developments for the benefit of particular groups at the expense of others and under the guise of being inclusive. However, let us now take the other side of the argument to its extreme, along the opposite assumption that there is a human-centred final goal with the development of DLT systems and solutions.

Why is a DLT-led world good for humanity? And if not for humanity as a whole, who will benefit? If we put aside the quite evident motives of selling products and services as intermediaries in emerging DLT based markets; acquiring assets and trying to get their value to increase through expansion of interest; and undermining and deregulation of traditional institutions for the benefit of this expansion, what is the point? For DLTs and contemporary markets alike – why should we do everything in our power to allow *the economy* to reach its alleged full potential? If we consider once again Mirowski's (in Lash and Dragos 2016) argument that markets are designed rather than organically developed, and that this to varying degrees has always been the case, even the fundamental argument in support for DLTs is anti-human in its philosophical positioning.

We must of course continue to suspend our disbelief and disregard our awareness of markets being designed to serve particular interests and accept the argument at face value – free market equilibrium is the best organisation of economic activity of any kind because it is the sum of all its profit-seeking parts. But since we also know that this development does never happen automatically, due to the alleged irrationality of actors and that it must be designed and continuously policed, the fundamental principle is to serve the market as some form of abstract being that requires incessant sacrifice and work. We know that the economic models only reflect behaviours that happen precisely because of the knowledge from previous economic models that have gone into the design of the present economic organisation, but yet they are treated as predictive and without performative agency.

'The economy' is an anti-human and abstract entity that must not be disturbed, as no one can predict the horrors that would stem from disrupting it, and this despite us already witnessing unpredictable downsides and negative effects from leaving it be. At the same time, though, the economic priests claim to know what *the economy* wants and what definitely *would* happen if it was disturbed, i.e. hyperinflation and economic collapse. Some are allowed to prepare the path in front of the economy, but others, particularly those who are deemed irresponsible, are not.

The most interesting element is that 'the economy' is not as complicated as it is made out to be, because it is just the name we give to the totality of economic interaction. What it is, however, is complex. Both the money and the markets are, as argued throughout this thesis, a human, social invention. The things we do to put value into and extract from our economies are for our own multiplicity of purposes (of which only some are profit-seeking). 'The economy' is in reality all human, but its complexity comes from the chain reactions to economic events from the sheer volume of humans that all have their own interpretations, knowledge bases and social positions with their own expectations which lead to unpredictable outcomes.

The reason planning economic activity seldom pans out as expected is that so much of what informs the decisions that people make is irrational and contingent on things outside of what can be perceived as cause and effect. The position I am taking here is thus that predicting markets and economic behaviour is not dependent on the amount of available data – the data necessary will never be obtainable because it is to an extent random as well as informed by all previous events and decisions taken, in an unorganised and irrational way.

If we take DLT and neoclassical economic claims at face value, we get an anti-human core philosophy in which the messy sum of our entangled economic behaviour has been deified and turned into an abstraction that we as humans should serve. In practice, this works as a loose gospel that can be called upon when you need others to make sacrifices for the maintenance of the economy, while it can be manipulated and contradicted when there seems to be too much uncertainty for your own economic stability. The elite in this system is not really those with political power in the classical sense, but those who are seen as knowledgeable in the ways of the economy. We seem to have collectively forgot that it is a creature of our own making and that we can decide what should be done with it. The scares of asset depreciation work well to keep those in line who own property, stocks or currencies, but we also see, especially online, a kind of worship of those who have managed to become rich, no matter how this was achieved.

As discussed in Chapter 3, the myth of meritocracy and that anyone in principle could be as successful as anybody else lets the average person believe that those who can navigate the economic world to their own benefit are deserving of anything they achieve, regardless of whose expense it happens at.

We see in plain sight how reputation and deliberate manipulation has enormous sway over market developments, but are simultaneously expected to keep pretending that these valuations reflect some form of fundamental value to the companies or assets. We can see that valuations can be changed by public opinion and behaviour. A recent example of this was the targeted squeeze of

Gamestop shares that had been shorted by a hedgefund (Cassidy 2021). The established players in the financial markets, as well as government representatives in the US were very quick to point to the harm this was doing to the economy, and how they were using loopholes to take advantage of flaws in the financial market. This quick response was accompanied by swift action to delimit the public's access to trading stocks and many suggested that the threshold for being allowed on the trading floor should be revised (Cassidy 2021). All these people did was to discuss online how to best execute the plan and in 'revenge' turn a hedge fund's substantial short position against itself. In other words, they were not doing anything that hedge funds are not already doing on a daily basis, but with the difference that it was the *wrong* group of people. We therefore know and have recent examples of how efforts by the general public can change perceived value, but yet, the consensus is that market values reflect some form of fundamental truth that is beyond our control.

9.4 – Agency and DLTs

The views and perspectives discussed above are what causes delimitation of possible actions within systems to seem like obvious choices and thus reduces agency for most actors on two levels – in deciding what the system should look like *and* what routes of action are available to them once they are using it. In the most rigid and decentralised DLT solutions, the possibility to appeal decisions or outcomes is also removed, leaving victims of faulty transactions, votes, automated insurance processes etc. without any option at all. When these questions came up in discussions, respondents all agreed that anything that could not be completely calculated in advance should not be in a smart contract at all,

> 'I think if the blockchain doesn't want to have those types of issues [of potential disputes], it would need only to have contractual, measurable information on it… we could put opinions [on a blockchain] but it needs to be a metric, right?… The issue that I have with [using] the blockchain for real life [sic], and it's not gonna be achieved, you know, in the next year or two, it's gonna take maybe a decade for [applications like] digital-ID to really be taking place and have your health data stored, the issue is the smart contract. You need an engineer to programme a smart

> contract, which at the end of the day means that it's only as smart as that, right? If only one person can update it, it's actually a dumb contract.' (Chief Partnership Officer, cryptocurrency exchange and asset management company, 2020).

There is therefore a simultaneous agreement that certain things are too complicated to suit the use of DLTs, but that areas such as finance trading, insurance and voting are not such things.

As mentioned in the previous chapter, what areas get pushed by DLT supporters and service providers is to an extent dependent on what is profitable and what is not, but at a conceptual level it also suggests that areas that operate like markets are less subjected to the complexities of human behaviour. This is also in line with the discussion about the fundamental motivations behind economic action. For this issue, we can see two separate assumptions coming forth. First, individual agency is seen as a driving force, a position that supports ideals of individual responsibility and success as a result of meritocratic features such as talent and hard work. But secondly, these behaviours are also seen as calculable and almost automatic, reducing agency to predictable effects of human nature.

The result is a view of agency that is fatalist when referring to the sacrifices that are unfortunate but essential (such as poverty and inequality), but which also gives credit to the individuals that benefit for their efforts in carrying out the inevitable. There is a balancing act at play which weighs claims about individuals being able to take meaningful actions based on their knowledge, skill and opinions against the accuracy of economic models, claimed to accurately predict the behaviour of these individuals. DLTs being designed and used to ensure that these actions stay in as narrow a line as possible therefore negates the individual choice at the same time that it supports buying into it, and trading the tokens as the way to express that skill and individuality. If anything, DLTs help distil the inherent contradictions of financial markets into more clearly visible versions.

Agency in terms of ability to take actions that actually change outcomes is more concentrated to those who are part of the inner circles. The contradiction was most clearly visible in discussions with

respondents when talking about how DLT solutions would benefit the average person in society, as well as those who live in poorer nations, discussed in Chapter 8. As demonstrated by these statements, the average person in the world, who is not involved in the financial markets or the tech world, is a receiver of benefits bestowed upon them by the benevolent platform providers. Poor members of housing associations are given cash in exchange for their household data; people in poorer countries pay international crypto investors for the privilege of using solar panels that are already installed on their rooves; and the uneducated masses should start investing in Bitcoin, because it just simply *is* the future of money and they would otherwise miss out. This is a position that looks down on most people's ability to make meaningful decisions on their own, without being shepherded into rigid DLT ventures. From the perspective presented by the DLT space, agency and meaningful choice is limited to what product to buy or what investments to make. There is no bother to include agency within the systems, as there are perceived obvious and natural ways that markets should be set up – the individual comes into play only to deposit their money, and time will tell if they made a choice that will pay out.

However, while the processes that exclude some people from decision making delimits agency in shaping the system in certain ways, this is not true for how these systems actually operate. A DLT is a network of actors, which rests upon the shared agreement that the network should be upheld. The agreement itself often includes the story of inevitability. The narrative seen throughout both literature review and findings from interviews suggests that technological and social development is a one-way track towards unending progression and refinement. The human behaviour that they want to delimit does not only interfere with what is perceived as the best solutions, but alludes to dealing with evolution and inevitability itself.

Reijers and Coeckelbergh (2018) argue that that there are two orders of narrative structures operating to support DLTs, where the first order is dominated by the developers and programmers writing the code. For people in the second order, the precoded possible uses and outcomes make

social relations more rigid and reduces both freedom, responsibility as well as dynamism. However, as part of their argument, they suggest that decentralisation allows for de-personalisation, and renders people freer to choose their relations. Building on Simmel, they argue that this is a good thing, as people of all classes and places in the world have a more even playing field. The de-personalisation argument is problematic for the same reasons as the concept of embeddedness in Polanyi (1957), in that it suggests that abstracted relations are less personal and by extension, less social.

Instead, what I am arguing here is that actual agency and social upholding of norms has not and can not be removed, but that influence by the average person is kept out through the use of a narrative that explains why this *must* be done. This is the same situation we often encounter when suggestions for reforming markets and economies are put forward, which similarly are dismissed as being backwards and standing in the way of the unfortunate but necessary cutbacks in public spending that have to be done to keep the inevitable economic development moving forward. The view of agency I am proposing here is thus on the narrow tightrope between dominant thinking on the one hand, that would suggest that all actors involved (elites and non-elites alike) are guided by the same overarching, and influential narrative, and on the other hand an argument for the performative elements that reify that dominant structure but leaves room for discontent.

Furthermore, as discussed by Chatterjee and Sanyal (2016), capitalist organisation does not need to enslave all people into the logic of capital accumulation, only enough to keep the system going. ‘The economy’ is not interested in actually accommodating everyone, but is complemented by an exclusion of those that are completely left out. It becomes the state and charity sectors’ job to uphold the ‘needs economy’ that ensures that those around the world that are completely locked out of capital accumulation are given the bare minimum.

This means, of course, that the DLT providers actually need the active agreement and partaking of the same people that they look down on and want to exploit, just like the traditional financial

systems need people to agree with the injustices and inequalities that give them the scraps that they need to survive. For narrative purposes, DLT supporters will find themselves in a contradictory position where traditional systems are criticised for being too rigid and elitist, while they are arguing for why more rigidity is what will save us from irrationality. The reason that so many people are buying into cryptocurrencies as asset investments is that it is just another layer of limitation to their agency that is already present. 'The economy' is anti-human and it should not come as a surprise that the distilled version of it, DLTs, is as well.

9.5 – Conclusion

This chapter has discussed the anti-human elements that, advertently or inadvertently, are present in common conceptualisations of society and economies in general, but exemplified by respondents' views on DLTs and cryptocurrencies in particular. I have related these aspects to tendencies of inequality, automatisation and deregulation associated with the particular imaginaries and narratives that are guiding much of how we view and organise ourselves in contemporary society. By insisting that the irrational elements of being human should be reduced, in favour of serving the abstract idealisation of 'the economy', DLTs and cryptocurrencies serve as a step along the path of creating rigid structures (often with paywalls) that delimit our possible economic and democratic activities. This is guided by assumptions that societal development is on an evolutionary continuum, but which nonetheless needs support to actually happen. I have argued that this in practice simply means that particular views of what *should* happen are *ensured to happen* by the mobilisation of economic, cultural and social capitals by influential people and organisations, in accordance with the discussions of speculation, platforms and authoritarian neoliberalism in Chapters 2-3.

This chapter has thus in a similar vein to Chapters 7-8 added to the understanding needed to answer all four research questions, through the unique contribution of focusing on what it means to be human in the paradoxical economic and technological landscape that continues to promote narratives of emancipation, freedom and liberalisation but which in practice are increasingly rigid and formulaic.

Chapter 10 – Conclusion

The goal of this project has been to explore what democratic and economic imaginaries inform the development and operation of DLTs and cryptocurrencies. This overarching research question has been supplemented by aims to find out who the most actively involved sectors are and how actors and organisations within them view DLTs. Emanating from these views, I have sought to map out what claims are made about using the technology to improve society and I have argued how we may understand the relationship between these imaginaries, actors and claims from a sociological perspective.

The views of society, humans, money, markets and economies that lead someone to create blockchain technology and cryptocurrencies in the first place matter on both a conceptual and a practical level. To conceive of cryptocurrency as 'better money' it *must* be assumed that 'the economy' is something separate from the rest of society, but also from the social interactions between the members of that society, locally and globally. This stems from a neo-classical/Austrian school conceptualisation of markets as sums of all actors' actions, driven by self-interested profit-maximisation – an equilibrium of supply and demand, or desires and provisions. Despite exchange of desires and provisions appearing to be both human and social engagements, to neo-classical perspectives this is denied and 'the economy' is considered an abstract entity that must not be disturbed. Contemporary attitudes towards the design of markets argue that for this to happen, people must be prevented from engaging with the economy in the 'wrong' (irrational) way.

These two imaginaries are present at the same time, which means that on the one hand human nature is seen to drive what happens and the concept of agency is reduced to implementation of the inevitable. Therefore, increasing knowledge about why economies work the way they do is viewed as pivotal and thus predictability, calculability, and knowability become essential goals for economic forecasters. But on the other hand, the agency of irrational actors is seen to disturb the natural order, which suggest that several elements of how humans engage with their economic reality fall

outside of this desired predictability – if the models do not explain the behaviour, then the behaviour must be made to conform to the models.

This view of economic activity and the nature of money bleeds into understandings of democratisation. If human nature is seen as a driver, then profit-maximisation is part of that human nature. Despite the contradiction of irrationality also being part of human behaviour, the goal of democratisation from this perspective is to *let* the human engage with others in the marketplace the way *nature intended*. 'Democratic' is therefore attachable to whatever allows an individual to follow this pursuit unhindered, in first instance in an economic sense, but also in choosing how to engage with society at all. Social structures that guide behaviour; recreate inequalities; and give different actors different starting points in life (in terms of their economic, cultural and social capital) are not recognised as important or even real, and the responsibility for success is therefore placed on each individual.

This further means that the individual should be rewarded for seizing opportunities and correctly predicting the course of society and economies, while the individual is also assumed to be acting according to predictable patterns commensurate with human nature. I have argued that it is not because of human nature, but particular configurations of money, markets and economies that we see these patterns unfold, and that prediction plays an important role in actually steering economic, political and societal development into these patterns due to the influence they have over societal structures. We could therefore imagine money and economies differently and put alternative patterns in place that recognise inequality as a choice and instead models democratic engagement on actual access and capacity, rather than as something the wealthy and influential just *happen to* have been the best at seizing the opportunity of. DLTs as drivers of democratisation are therefore limited to rigid ideas about democratic engagement that entrench the myth that the individual alone is responsible for their destiny.

Related to both economic and democratic discussions, I argue that the rigidity of these systems in how they try to remove irrational behaviour equates to an anti-human position, as it seeks to deny large parts of human activity. The 'communities' that surround DLTs and cryptocurrencies, both for each project and the space as a whole could instead be seen as cooperatives at best, and temporary groups of people with similar economic interests at worst. As agendas for political change have been individualised, so has the idea of how a person relates to society. The human has become a tool in the curation of the economy, rather than the economy serving the interests of the human. A small minority of influential members of society benefit from this order while the narrative that informs their (and much of the general public's) understanding acts to reproduce these ideas as truth – the social structure reproduces knowledge about itself.

While recognising these structural challenges opens up for discussions about resistance and dissent, DLTs, like other economic structures, can hinder certain forms of social engagement, agency and capacity to act differently and so this is also a question of narratives informing our understanding of ourselves. The potential for true disruption is quenched by surface-level claims of disruption that act in the favour of already established patterns. Where resistance is attempted not through seizing power or subverting the intentions of a platform, but by embracing the chaos of speculation-driven reality in order to throw spanners in the works of calculability and rationality, a second problem appears. The hunt for perfect knowledge is often more of a façade than actual ambition and those who stand to benefit the most from volatility are those with the means to speculate big while simultaneously having a hand on the scales. More people than ever are driven to have no other choice than to place their bets on *something*. This *something* is for some people DLT-related investments and while this may give them a chance to successfully play the game, it also adds fuel to polarisation of thought as well as accelerates the churning of wealth into and through financial speculation.

The themes outlined above are of course generalised conceptualisations of attitudes and actions. I have with this thesis contributed a typology of four different archetypes of actors that are interested or invested in DLTs and cryptocurrencies, that all come with different goals and ideas about how to best utilise the technology. To some extent the pure profit-maximisation and totality of the narrative described above therefore only partially cover motivations and opinions of particular people and/or organisations. However, the overarching imaginary about how money and markets work *is* common to all four archetypes, and they therefore share a fundamental flawed vision of how DLTs relate to trust and democratisation. For example, the crypto-idealist who is closely aligned to the ideals of using 'perfect money' to overcome the inherent corruption and manipulation by malicious actors and nepotistic power structures in society never challenge their idea that money and markets are separate from social values and performative, relational work. They approach the problem with the same narrative and logic as the system they seek to challenge, disrupt and replace. The crypto-intermediary utilises the same narrative, but is not actually bothered about challenging society. If they can provide a service or open a new marketplace (usually through exploiting under-regulation), what remains of these ideals at the end of the line is of less importance. I have explained that this largely is a reflection of being similar in structure to the ubiquitous 'platform', and acts to put closely monitored and 'community'-controlled intermediary structures between people to enable the extraction of rent or charging of transaction fees. The crypto-speculator likewise utilises the narrative to expand financial markets to cover anything that can be packaged as an asset. Their goal for using DLTs is to commodify what previously remained unsellable in the physical world, as well as to trade completely virtual assets, such as cryptocurrencies, or even bundled futures contracts on the crypto-markets. For these two latter archetypes, democratisation is a buzzword, and not much more.

The crypto-developer may share the values of the idealist, or may be driven by developing new technology just for exploration's sake, but they are like the crypto-idealist often simultaneously also a crypto-speculator or crypto-intermediary. To the crypto-developer, regardless of motives, they are

usually less convinced by the narrative but are nonetheless drivers of the particular developments that allow for the reproduction of the type of inequality that is the result of contemporary capitalism.

These archetypes provide useful ways for sociologists and other social scientists to analytically approach people's motivations and reasons for being interested in DLTs. I have conceptualised them as embodiments of different imaginaries and narratives, and they are meant to represent ideas rather than specific cohorts of people. However, the typology will benefit from additional empirical research. This could include broadening the type of respondents to interview, and expanding the data set.

Concerning the possibility of DLT-enabled 'distributed democracies', I argue that the views of democratisation that were reflected in the data and ever-present in DLT literature will not result in any fundamental democratisation of society at large. However, despite my assessment that being built on similar economic understandings and interests will lead to similar outcomes, the technology can be used for public good, but not in the way imagined by most actors in the DLT space. As reflected in discussions with some respondents, the most likely future scenario (aside from the deregulation of markets and increased speculation) is that governments and large organisations will absorb blockchain technology and use it in a permissioned and centralised way. What this may provide is transparency and ownership of data for the global citizen. However, because the goal of making the data available is so that it can be used by companies whose business models focus on offering or facilitating a data-driven service, this ownership is likely to serve in name only, as giving up one's data becomes a condition for using increasingly *essential* services. DLTs *can* thus be used to counter the mining of big data and to increase visibility of corruption but *only* if it is unpaired from the goal of extracting profit. Furthermore, this view of improving society (which as I remind you was only raised by a minority of respondents) also comes with some anti-human side effects, such as constant surveillance of transactions and credentials. This is of course a development that is

happening anyway, as more and more elements of society and interaction are digitised, including digital IDs and the creating of CBDCs (Central Bank Digital Currency). The weighing of benefits and drawbacks of the convenience and security that this transparency can bring, versus the surveillance and tracking that is central to such a system (and how it implies that others cannot be trusted unless they are watched) seems to be tipping in favour of 'what the market wants'. This pattern is already evident in other developments in global and domestic payments markets, where innovation meant to improve security and convenience for citizens is effectively shut down by the banking and payments industries if there are no apparent profit extraction opportunities associated with the solution[42]. The point of DLTs may to some actors be aligned with a set of values and morality grounded in either resistance to the global dominance of traditional finance *or* a fundamental belief in the teachings of neoclassical economics. To others (and seemingly the majority) it may instead be a matter of finding whatever new technology can be hyped for the purpose of speculating on all aspects of it and cashing out before it is revealed whether the bet was well placed or not.

With this thesis I make four significant contributions towards a sociology of cryptocurrencies and DLTs. First, I have recounted and provided a balanced sociological interpretation of how DLTs work in relation to what they aim to solve. Second, I have contextualised this interpretation through three themes, Trust, Democracy and Humanism. These themes provide useful framing for understanding how the technology tends to echo both practical and ideological tendencies already widespread in the finance and technology sectors, not least in the similarity between DLTs and the ubiquitous 'platform'. Third, my analysis is grounded in first-hand accounts from actors engaged with DLTs and their associated 'communities'. This provides a unique empirical dimension to this thesis, as there is a marked lack of this type of data in interpretations of the technology from within sociology and

[42] A recent example from a UK context includes Variable Recurring Payments (VRP) which similarly to Direct Debit is a way to schedule payments. The difference is that VRP uses Open Banking (and therefore sharing of data between companies and the customer's bank) with the power to change the range of values a company can charge residing with the customer. This was proposed by the Payment Systems Regulator (PSR) to be both free and mandatory for all financial institutions to offer and provide data for. PSR published in August 2024 a 400+ page summary of responses from their banking and payments industry stakeholders, which outlines why they all thought it was a terrible idea (Payment Systems Regulator 2024).

adjacent disciplines. Fourth, my analysis has through these engagements allowed me to develop a typology of four archetypes that represent different motivations and ideological approaches to DLTs.

In summary, speaking to the research questions guiding this thesis, I argue that the imaginaries and narratives associated with DLTs are largely aligned with already commonplace understandings of economic activity (RQ1). The sectors and actors most involved are those who usually place themselves on the frontlines of new markets – those with the economic, cultural and social capital needed to exploit deregulated spaces for various kinds of profit, such as rent on infrastructure use, transaction fees and capital gains on trading assets (RQ2). With some variation, exemplified by the archetypes, they envision democratisation in a way that largely conforms to libertarian ideals, viewing democracy as equivalent to financial participation, decentralisation (as shorthand for deregulation and financial liberalisation), and emancipation of the individual from society itself (RQ3).

Through analysis of these activities, claims, and imaginaries from sociological perspectives (RQ4), I have argued that DLTs and cryptocurrencies *are not* challenging or disrupting the traditional financial system or society, because they are part of the same ideological project. The same inequalities are bound to be repeated as the performative, relational work that upholds our present structures act to recreate the DLT space in its own image. We can challenge this, but I argue that this does not involve pushing for DLTs to be used for public good, even in the discussed declawed, not-for-profit capacity oriented towards giving the average global citizen more control over their own digital footprint. The fundamental principles of DLTs and the markets around them are not there for the benefit of society or its citizens. In their most liberal forms, they act as unregulated and uncontrolled funnels for global wealth accumulation among a shrinking group of elites. These versions also often have huge environmental tolls and are routinely used for criminal activity. On the other side of the spectrum, the centralised and supervised versions are instead not needed at all – they are not much more than expensive spreadsheets with tacked-on buzzwords. So, to in this final paragraph address the

question in the title of this thesis, DLTs are not the route to achieve any distributed democracies worth their name.

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Appendix 1 – Abbreviations and glossary

Bitcoin	The first cryptocurrency. The name of its underlying DLT, Blockchain, is now synonymous with DLTs in general. Is created in the 'hashing' process when new 'blocks' are added by 'nodes' on the 'Blockchain'. Utilises a 'permissionless' 'proof-of-work' system.
Block	The term for a collection of transactions that have been validated by the nodes on the DLT network. Depending on the type of DLT system, the process to create blocks is different, but 'nodes' typically compete in some way to get to add the next block to the chain of previously validated transactions held in previously added blocks. The process of adding new blocks is called 'mining', as the successful node is rewarded with cryptocurrency tokens.
Blockchain	The name of the underlying infrastructure for the first cryptocurrency, Bitcoin. It is therefore also the first 'DLT', but has become a term used to refer to all DLTs as well.
CBDC	Central Bank Digital Currency – A digital currency issued by a country's central bank, backed by fiat currency.
Cryptocurrency	A token or digital coin created through programmed processes carried out on the DLT network. These tokens can represent physical objects or be completely virtual. They are often sold for fiat currency and traded as assets on global currency exchanges. Depending on the type of DLT, these can be limited or unlimited and be created through the process of adding 'blocks', or sold en masse at the launch of a new DLT system, a so called 'ICO'.
DAO	A decentralised autonomous organization – an entity with no central leadership. Decisions are made by community members suggesting changes or smart contracts to all the nodes in the DLT network, which use their tokens to vote on suggestions.
DeFi	Decentralised Finance – a term for blockchain-based finance that ostensibly does not require intermediaries. DeFi conduct their business using 'smart contracts' instead of needing contracts to be brokered or verified by a third party.
DLT	Distributed Ledger Technology, also called 'blockchain technology' or simply Blockchain. A network of computers that hold identical, transparent copies of the same ledger, covering all transactions of the system's cryptocurrency to ever take place on the network.
Fiat currency	Money issued by the state and not backed by a commodity. The state is the guarantor of the currency's usefulness. Usually controlled by a country's central bank.
Hashing	The process of converting a string of information into a different, usually shorter, set of characters. In many DLT systems, this is done through 'proof-

	of-work', which requires the 'nodes' to compete to be the first to solve an algorithmic puzzle and thus get to add a new 'block' of validated transactions to the chain.
ICO	Initial Coin Offering – is the selling of pre-created tokens upon the launch of a new DLT system. It is the equivalent to IPO, Initial Public Offering, when a company makes shares available for public purchase on the stock exchange. However, many ICOs have turned out to be fraudulent, where the tokens are sold for fiat currency and the company later abandoned.
Mining	The mining of new cryptocurrency can be done through various processes, depending on the type of DLT. The most common forms include 'proof-of-work', 'proof-of-stake', and 'proof-of-elapsed-time'. Regardless of type, mining is the term for adding a new 'block' to a DLT and usually rewards the successful 'node' with tokens of cryptocurrency.
Node	The term for a computer in a DLT network. Usually the computer offers a function to the operation of the network, such as computing power to solve algorithms or idling hardware to indicate commitment. The nodes verify transactions and compete to add new 'blocks' to the ledger. A node is often rewarded for its services by receiving payment in cryptocurrency tokens automatically generated by the DLT process.
P2P	Stands for Peer-to-Peer and refers to a group of computers that are linked together with equal permissions and responsibilities for processing data. It signifies a direct connection between entities, such as 'nodes' on a DLT, without a middleman or intermediary.
Permissioned DLT	A permissioned DLT means that unlike Bitcoin's Blockchain and similar DLTs, not any node can take part in the network on equal terms. The access may be restricted to viewing rather than creating and editing the ledger, or access can be completely private. A helpful comparison is to view the difference between permissioned and 'permissionless' DLTs as equivalent to the difference between an intranet and the internet.
Permissionless DLT	A permissionless DLT means that there is no restriction to who can take part as a node in the network, unlike other 'permissioned DLT' systems. Famously, Bitcoin's Blockchain is permissionless and anyone who operates the software can take part in the 'mining' of Bitcoin. A helpful comparison is to view the difference between 'permissioned' and permissionless DLTs as equivalent to the difference between an intranet and the internet.
Proof-of-elapsed-time	One of the possible systems for generating new 'blocks' on a DLT, a process also known as 'mining'. Unlike 'proof-of-work' systems, which requires 'nodes' to solve an algorithmic puzzle, proof-of-elapsed-time requires nodes to demonstrate proof of having idled their hardware for a certain period.
Proof-of-stake	One of the possible systems for generating new 'blocks' on a DLT, a process also known as 'mining'. Unlike 'proof-of-work' systems, which requires 'nodes' to solve an algorithmic puzzle, a proof-of-stake model requires nodes to put up their already owned tokens as collateral. In return, they get

	authority over the DLT in proportion to the amount they stake. This means that the more a node owns, the more power it has over that particular DLT.
Proof-of-work	Is the 'mining' process that requires 'nodes' to solve algorithmic puzzles and compete to be the first to do so, in order to add a new 'block' to the DLT. The solving of the puzzle is called 'hashing' and the reward for being first and adding a new block is usually newly cryptocurrency tokens of the system, issued as the block is added. This is the model used by the original DLT, Blockchain, for the operation and issuing of Bitcoin.
Smart contract	A pre-programmed set of transactions or other executable effects that automatically happen once certain conditions are met and inputted to the DLT. This could for example be an insurance policy, in which the smart contract will pay out automatically *if* it has registered that all premium payments have been previously met and that it has verified that whatever the insurance covers has happened. Often requires information from outside of the DLT system, and is thus more complicated than a simple transaction.
Stablecoin	A cryptocurrency pegged to the value of a particular fiat currency, bundle of fiat currencies or valuable commodity. This means that it is a digital representation of other currencies or commodities and does usually not have as volatile valuation trends as independent cryptocurrencies.

Appendix 2 – Template invitation email[43]

Dear _____,

My name is Lukas Chakravorty-Aspelin, PhD researcher in economic sociology at the University of Leeds.

I am writing to invite you/a representative of your organisation to take part in a research project concerning the social impact of Distributed Ledger Technology (DLT).

As DLTs are incorporated into more and more areas of society, it is important to understand the potential use, reach, and limitations of the technology. For this purpose, it is vital to get insights from people who are on the frontline of utilising, or planning to use, DLT in their business/work/organisation. Through my research into this field, I have come across your name/organisation as a key player and great representative in the area of finance/energy/law, and would like to speak with you about your thoughts on the current state and potential futures of DLTs.

The research will result in the publication of academic journal articles and a PhD thesis, with the aim of providing policy makers and stakeholders with relevant and informed sociological analysis of the field.

Your participation will take the form of a 60-90 minute interview, in person or over the phone/Skype, at your convenience. For more details, please see attached Participant Information Sheet.

I hope you are interested in taking part and I look forward to hearing from you.

Best wishes,

(Karl) Lukas Chakravorty-Aspelin

PhD researcher

School of Sociology and Social Policy

University of Leeds

[43] The actual invitation emails were individualised and revised multiple times throughout the data collection process.

Appendix 3 – Table of data sources

Data source type	Description	How sourced/approached	Place	Date
Interview respondent	CEO, blockchain energy company 1	Company identified through mention in academic journal. Cold emailed.	Video call	11 February 2020
Interview respondent	CTO, blockchain energy company 2	Company identified through mention in academic journal. Cold emailed.	Video call	25 February 2020
Interview respondent	Chief Partnership Officer, cryptocurrency exchange and asset management company	Approached at CCDAS 2020.	Video call	4 May 2020
Interview respondent	COO, cryptocurrency accounting software company	Company identified through mention in academic journal. Cold emailed.	Video call	5 May 2020
Interview respondent	Business Development Representative, DeFi company	Approached at CCDAS 2020.	Video call	11 June 2020
Interview respondent	Ecosystem Director, open source blockchain platform	Company identified through mention in academic journal. Cold emailed.	Audio call	1 July 2020
Interview respondent	Business Lead, blockchain energy company 3	Company identified through mention in academic journal. Cold emailed.	Video call	2 July 2020
Interview respondent	Software developer, blockchain badge and certificate solutions	Company identified through mention in academic journal. Cold emailed.	Video call	23 October 2020
Conference	Crypto Compare Digital Asset Summit 2020. Hosted by CCData and sponsored by various speakers/presenters, including BitFinex, eToro, IBM, Crypto.com, and Bitstamp.	People identified as potential respondents were posting on social media that they were going to attend.	Magazine O2, London, UK	10 March 2020
Conference	Bloomberg Crypto Summit 2021. Hosted by Bloomberg live in collaboration with other Bloomberg subsidiaries Bloomberg Intelligence and Bloomberg Global Data. Sponsored by BitGo and Grayscale.	Found on online list of upcoming high profile crypto events.	Online	25 February 2021
Conference	Global DeFi Summit 2021. Hosted by Draper Goren Holm, a blockchain venture studio and investor/incubator of new businesses in the space. Sponsored by Plenty, Circle and Rangers Protocol.	People identified as potential respondents were posting on social media that they were going to attend. Publicised as one of the biggest events in the space.	Online	24 June 2021

Conference	DeFi Summit London 2021. Described as a community conference on decentralised finance. Hosted by DeFi summit, which is a collaborative project between DeFi platforms. Sponsors included: Ox, Consensys, and Centrifuge.	One of the respondents who also spoke at CCDAS 2020 was speaking at this conference as well.	Online	July 2021
Grey literature – Online article	Deloitte - 'Deloitte's 2020 Global Blockchain Survey'. Published without specified author under Deloitte Insights branding.	Desk based research of company websites.	Online	Last accessed 17 October 2021.
Grey literature – Online article	Ernst & Young - 'World's first blockchain platform for marine insurance now in commercial use'. Published without specified author in May 2018 in the news section of the main EY website.	Desk based research of company websites.	Online	Last accessed 17 October 2021.
Grey literature – Online article	Ernst & Young – 'Blockchain platforms'. Published without specified author in the Blockchain section of the main EY website.	Desk based research of company websites.	Online	Last accessed 17 October 2021.
Grey literature – Online article	Ernst & Young – 'What's essential to scale blockchain?'. Published without specified author in the Consulting section of the main EY website.	Desk based research of company websites.	Online	Last accessed 28 January 2021.
Grey literature – Website document	Ernst & Young – 'Blockchain – In Financial Services'. Published without specified author in the Blockchain section of the main EY website.	Desk based research of company websites.	Online	Last accessed 19 August 2021.
Grey literature – Online article	Ernst & Young – 'Four ways blockchain can benefit insurers'. Published without specified author in the Consulting section of the main EY website.	Desk based research of company websites.	Online	Last accessed 22 August 2021.
Grey literature – Online article	Ernst & Young – 'Five learnings from a blockchain interoperability hackathon'. Published 11 April 2019 in the Consulting section of the	Desk based research of company websites.	Online	Last accessed 17 October 2021.

	main EY website. Attributed to David Williams, EY UK Banking & Capital Markets Technology Consulting Leader.			
Grey literature – Company report	Ernst & Young – 'EY OpsChain Network Procurement'. Published in the OpsChain section of the main EY website. OpsChain is EY's own blockchain platform and the page where the report is published lists the 'team' as only consisting of Paul Brody, EY Global Blockchain Leader.	Desk based research of company websites.	Online	Last accessed 22 August 2021.
Grey literature – Online article	KPMG – 'Six blockchain and cryptoasset predictions for 2020'. Published without specified author in the Technology Innovation section of the main KPMG website.	Desk based research of company websites.	Online	Last accessed 17 October 2021.
Grey literature – Online report	KPMG – 'Blockchain and the Future of Finance'. Published without specified author in the Insights section of the main KPMG website.	Desk based research of company websites.	Online	Last accessed 19 August 2021.
Grey literature – Online report	PwC – ' PwC's Global Blockchain Survey 2018 – Blockchain is here. What's your next move?'. Published without specified author in the Publications section of the main PwC website.	Desk based research of company websites.	Online	Last accessed 17 October 2021.
Grey literature – website document	PwC – 'Smart Credentials – Trusted, secure and tamper-proof credentials in real time'. Published without specified author in the Blockchain section of the UK branch main PwC website. Steve Davies is listed as UK Partner and point of contact.	Desk based research of company websites.	Online	Last accessed 22 August 2021.
Grey literature – Company report	PwC – 'Time for trust – the trillion-dollar reasons to rethink blockchain'. Published without	Desk based research of company websites.	Online	Last accessed 19 August 2021.

	specified author in the Tech Agenda section of the Today's Issues portal of the main PwC website.			

Appendix 4 – Interview questions[44]

General

1. What drew you to DLTs?
2. Why do you trust DLTs?
   2.2 Why should the public trust DLTs?
3. What are the greatest strengths of DLTs, in your opinion and experience?
4. What are some of the weaknesses? Can they be overcome? How?
5. What makes DLT solutions different from traditional/legacy solutions?
6. Is DLT enabled trust better than traditional/current solutions for trusting monetary/financial institutions/energy trading/the legal system/contract enforcement), if so why?
7. Is DLT based transparency better than legacy solutions, if so why?
8. Do DLTs improve/enable openness - how?
9. Do DLTs improve/enable accountability - how?
10. Do DLTs enable cooperation - how?
11. Do you consider DLTs to be safer from manipulation/fraud than legacy solutions?
12. How do you envision the future of DLTs?
13. How do you foresee DLTs changing your field/sector specifically?
14. How will governments be affected by widespread adoption of DLTs in general?
    14.2 Currency in particular? Energy trading in particular? Smart contracts and dispute resolution in particular?
15. Will DLT based solutions replace legacy solutions in your sector? What about other sectors/society in general?
16. What do you consider to be the biggest barriers to widespread DLT adoption?

DLT differences

17. How would you say that DLTs are affecting society today?
18. How do you feel about the relative instability of cryptocurrencies, as compared to fiat currency?

[44] These questions acted only as a guide to conversations, and each interview consisted of a different combination of questions, depending on the topics covered. Additional follow-up questions were also asked impromptu throughout the interviews.

19. Many nations classify cryptocurrencies as financial assets akin to shares, rather than “money”, what are your thoughts on the classification of cryptocurrencies?
20. What are your views on the various forms of DLTs out there, such as permissionless, permissioned, consortium, etc.?
    20.2 Does the choice of type affect their trustworthiness? How?
    20.3 Are permissioned ledgers democratic? Why/why not?
21. What are your views on the different consensus mechanisms that exist, such as proof of work, roof of stake, proof of elapsed time, proof of value, etc.?
    21.2 Does the choice of mechanism affect their trustworthiness?
    21.3 Are all mechanisms equally democratic? Why/why not?
    21.4 What may be some of the reasons for choosing a particular mechanism?
22. What are your views on IoT?
    22.2 How is the stability/security/trust of a DLT platform affected by the need for external (off-chain) information?
23. What are your views on the regulation of DLT use?
    23.2 What is the ideal level and type of regulation for DLTs?

Organisation

24. How important is the token/coin element to DLTs in general?
25. How important is the token/coin element in your business?
26. How do you employ DLTs in your business/organisation?
27. Why did you choose a DLT solution? What other options were there?
28. Do you believe networking is important for the establishment and use of a DLT-based platform/product?
29. Do you believe technical knowledge is important for the establishment and use of a DLT-based platform/product?
30. Do you believe networking/technical knowledge/reputation to have been important in the establishment of your platform/product?
31. Do you believe the reputation of the developers/managers/key investors are important for the establishment and use of a DLT-based platform/product?
32. Do you believe the reputation of the developers/managers/key investors are important for the establishment and use of your platform/product?
33. Do you think pioneer advantage was important in your choice to engage with DLTs?

33.2 If DLTs were already widely adopted, would you have chosen another route?

34. Did you/your organisation have a choice not to engage with DLTs? If so: why did you not choose the other route?
35. How important are the values associated with DLTs in the operation of your organisation?
36. How important are "whispers and rumours" in both physical and online forums to the success of a DLT-based platform/product?
37. How important are the opinions of others within the DLT fields/communities to you in your choice of implementation of DLTs?
38. Do you engage in promotion of DLTs? How do you do this? (in conversation with people you know; forums online; advertising; to clients)
39. Does how you present a DLT affect the likelihood of adoption? (I.e. if a DLT can ride on its own technical features, why does it need selling? If it needs selling, there is an element of trust in the system itself that needs to be overcome).

Community

40. What do you consider to be the core values associated with DLTs?
41. Do you associate DLTs with any particular political values, if so: which?

    41.2 Do these political values affect their design – if so how? If not, why not?
42. How would you define the DLT community? (i.e. "merely similar ideologies" or "loose association" to "club of likeminded people")

    42.2 Does the DLT community have the values you associate with DLTs in common?
43. What kinds of people are most likely to use DLTs?

    43.2 Who are the early adopters?

    43.3 How would you describe a person likely to adopt DLTs?

    43.4 Does the composition of the community affect the design of the technology?

    43.5 Does the composition of the community affect the application of the technology?
44. Do you consider DLTs and the DLT community to be pragmatic?
45. Do you consider DLTs and the DLT community to be idealistic?
46. There are many organisations and companies (some who host their own DLT-based operations, and some who don't) that promote the use of DLTs and similar distributed technologies. What are your views on promotional work of the technology itself?

    46.2 Does promotion affect the future of DLTs? How?

47. How do you think different groups (examples of different groups, such as older people, marginalised communities, people outside of Europe/the West, etc.) of people will adopt DLTs into their daily lives?

    47.2 How will DLTs change their day-to-day practices?

48. How would you say DLTs affect different classes/income brackets/the poorer in society etc.?

    48.2 Are some groups in society better helped by DLTs than others? Which groups?

    48.3 What about globally, will DLTs improve lives equally across the world? If so, why? If not, why not and who will be less helped?

49. Do you believe there are any prerequisites to adopting DLTs that may affect accessibility?

    49.2 If so, how will difference in accessibility affect the outcomes, who benefits, democratic claims?

50. How would you define decentralisation?

51. What does a DLT system need to be really decentralised?

52. Should decentralisation be one of the highest priority goals in DLT/society/your organisation?

    52.2 Are there steps/levels of decentralisation over time, or should it be there from the start without compromise?

53. If you imagine the world already operating on DLT principles, systems and ideologies, what would the response to Covid-19 have looked like?

Appendix 5 – Participant Information Sheet

School of Sociology and Social Policy

UNIVERSITY OF LEEDS

Participant Information sheet

You are invited to take part in the research project 'Distributed Democracies? A sociological analysis of DLTs and cryptocurrencies in finance, energy and law'. Please take the time to read the following information carefully before you decide. Feel free to ask if anything is unclear or if you would like more information. You will find contact details at the end of this document.

The purpose of this project is to understand the current and potential future impact of Distributed Ledger Technology from a sociological perspective, particularly focused on the sectors of finance, energy and law. For this purpose, information and insights will be drawn from discussions with people who are currently working with, or are planning to employ, Distributed Ledger Technology in the operation of their organisations. These discussions with users and innovators will form the central body of data of the project.

You have been identified as a prospective respondent for this project because you currently work with or plan to employ Distributed Ledger Technology in an organisation related to one of the three relevant sectors.
It is up to you whether you want to take part or not. If you decide to take part, you will be asked to give your consent to the use of your data, either verbally or in writing. You are free to withdraw your consent and participation at any time. You do not have to give any reason for your decision.

Your participation will take the form of an informal interview, for which questions have been prepared in advance. The questions will relate to your experience, opinions and thoughts on the topic, both on an organisational level and more generally about the technology and related areas. Most of the questions will be open ended and allow you to elaborate on your thoughts. The interview is expected to last around 45-90 minutes.

Whilst there are no immediate benefits of taking part, the goal is to produce a holistic understanding of the impact of DLTs, including areas that as of now have not been completely explored. The aim is for this information to help inform policy makers and others who are shaping the field of DLTs to take social factors into consideration.

The interviews will be recorded using audio (or audio/video) capturing tools, such as built-in functions of Skype or a digital voice recorder. The data will be stored on secure servers hosted by the University of Leeds and kept for the duration of the project and up to three years after publication of the thesis. In addition to the thesis, the data will also be used in academic articles throughout the project. The data will be anonymised and no permanent aliases will be assigned to any participant. This means that it will not be evident from the material if separate statements are from the same participant or not.

This research has been reviewed and approved by the Business, Environment and Social Sciences joint Faculty Research Ethics Committee (AREA FREC) at the University of Leeds.

If you have any further questions or concerns please contact:

Karl Lukas Chakravorty-Aspelin (Researcher): ssklc@leeds.ac.uk

or

Dr Mark Davis (Supervisor): M.E.Davis@leeds.ac.uk

Project title	*Document type*	*Version #*	*Date*
'Distributed Democracies? A sociological analysis of DLTs and cryptocurrencies in finance, energy and law'	Information sheet	3	02/03/2020