In blockchain we trust: the ideological production and maintenance of trust in Bitcoin

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ABSTRACT

In this paper, we examine the discourses and ideologies that underpin trust in Bitcoin (BTC) as an algorithm-driven socio-technical system, raising critical questions about how trust is established and sustained in complex socio-technical assemblages. Through a Critical Discourse Analysis (CDA) of three significant events in the cryptocurrency, we identify two interconnected, yet sometimes contradictory, ideologies enacted through four discourses that construct specific subject positions to produce and maintain trust in Bitcoin. The first, *technical sovereignty*, reflects adherence to notions of technical utopianism. The second, which we term *peer-to-peer neoliberalism*, frames BTC as a political experiment rooted in the individualization of responsibility and risk. Our paper contributes to the existing literature by arguing that algorithm-driven technologies like BTC neither establish trust solely through their apparent technical neutrality and security nor simply replace traditional institutional mechanisms of governance, control, and interaction. Instead, they are enacted through discourses and material arrangements that require continuous maintenance. This maintenance relies on power relations enabled by these ideologies yet remains contingent upon the ongoing reinforcement of the ideologies themselves—rendering trust inherently precarious and always at risk. This insight shifts the analytical focus from the dominant emphasis in the literature on technical features,

social arrangements, and user perceptions to the underlying ideological frameworks that shape these elements, as such.

Keywords: Bitcoin, blockchain, trust, ideology, discourse, Critical Discourse Analysis

1. Introduction

This paper investigates how trust in blockchain technology is produced, specifically focusing on the Bitcoin ecosystem. Bitcoin (BTC) stands as the pioneering cryptocurrency and remains the most widely recognized digital currency in the market (Bitcoin.com, 2023). At its core, Bitcoin operates as a peer-to-peer system that enables digital transactions through blockchain technology, eliminating the need for traditional banking infrastructure. Bitcoin's supporters emphasize three revolutionary aspects of the technology: (1) The elimination of traditional financial intermediaries, allowing direct peer-to-peer transactions; (2) The creation of a trust-less system through cryptographic verification and blockchain consensus mechanisms; (3) The integration of political, philosophical, and economic principles into a unified system (Bitcoin.com, 2023).

Advocates of Bitcoin envision a future where "political or biased intermediaries can be dislocated and replaced by apolitical machines and algorithms" (Introna and Pecis, 2019:45). This vision represents a techno-utopian ideal of a decentralized financial system (Dodd, 2016). However, Bitcoin's real-world implementation has deviated significantly from its founding principles (Dodd, 2015). Despite its promise of decentralization and democratic control, the Bitcoin network has developed new forms of centralization. Power has become concentrated among a small group of core software maintainers, while computational resources have clustered within a few dominant mining pools (The Guardian, 2018).

As the most widely known and traded cryptocurrency, BTC has experienced significant fluctuations in value over the last decade. On December 27, 2017, a day that marked what became known as the bursting of the Bitcoin bubble (The Guardian, 2018), the value of BTC crashed from $20,000 to below $12,000. Throughout 2018, the cryptocurrency remained in the doldrums, with major hacks occurring in Korea and Japan (Bloomberg, 2018). Yet, as of February 2025, Bitcoin's market capitalization stands at around $1.96T, and it currently requires the same amount of energy as a small country.[1] Investment in this currency persists despite its perhaps most significant market crash in 2022, when the value of BTC plummeted below $16,000 after reaching $64,000 in 2021 (Partz, 2022). Indeed, cryptocurrencies and their exchanges have proven highly volatile in recent times, as evidenced by Sam Bankman-Fried and the collapse of his cryptocurrency exchange FTX (BBC, 2022), and Dogecoin's infamous fluctuations following tech billionaires' 'tip offs' (BBC, 2021; Osorio, 2023). Bitcoin's ecosystem – its exchanges, proponents, infrastructure, and value – has been marked by significant and rather systematic crashes, scandals, and fraud. Thus, it would be reasonable to expect a substantial decrease (if not a complete collapse) of public trust in the cryptocurrency. Yet, despite the volatility of its monetary value, certain actors maintain their fundamental trust in Bitcoin. It is this apparent anomaly that is of interest and that we want to explore in this paper.

Given this apparent contradiction we focus our investigation on understanding how trust is produced and maintained in Bitcoin—understood here as an instantiation of blockchain technology as a complex "socio-technical assemblage" (Hayes, 2019: 49). Historically, trust is seen as both a lubricant and an unavoidable dimension of social interactions (Gambetta, 1988), as well as a "basic fact of social life" (Luhmann, 1979:5). Challenges to governance, institutional

[1] The Cambridge Center for Alternative Finance (CCAF) found that Bitcoin consumes around 110 Terawatt Hours per year (that is 0.55% of global electricity production). This is roughly the annual energy draw of Malaysia and Sweden (Carter, 2021).

crises, and organizational changes all raise the pertinent question of how individuals can maintain (Gustafsson et al., 2020) or repair trust (Bachmann et al., 2015). Regarding trust and socio-technical assemblages, current research has established how trust becomes produced in the use of technologies (Schuetz et al, 2024), how digital trust seems to become enacted (see, for example, Möhlmann, 2021), and how trust in algorithms becomes established and evolves over time (Swan and Brunswicker, 2018; Cabiddu et al., 2022). However, at the time of writing, empirical studies focusing on how trust in complex distributed socio-technical assemblages becomes enacted and maintained, particularly under the tumultuous conditions presented above, are lacking. Moreover, most of the existing literature lack theoretical resources to theorise trust more generally, and in complex socio-technical assemblages, more specifically. In light of ongoing scholarly debates, we contend that more work is needed to understand and explain how trust is produced and maintained in unfamiliar and opaque organizational and institutional arrangements—as is the case in BTC. Specifically, we want to explore both empirically and theoretically *how trust is produced in complex socio-technical assemblages and how such trust is maintained in spite of the impenetrable nature of these forms of organising*?

To address this question, we argue and show below that there is a need to focus on how ideologies, and their associated discourses, function to enact trust in Bitcoin as a socio-technical arrangement (Knittel et al, 2019; Baldwin, 2018). For the purposes of this research, we define ideology as the productive force that organizes "opinions, attitudes, and values – a way of thinking about man and [about] society" (Adorno et al., 1950: 2). Importantly, ideology is not merely a matter of thought; it becomes enacted through material-discursive practices: "an ideology always exists in an apparatus, and its practice, or practices" (Althusser, 1972/2008: 40). This implies that ideology "is always *materialized* [or enacted] in practices" (Mouffe, 2014: 186), and such material and discursive practices, in turn, produce subjects and "organize action"

(Mouffe, 2014: 186, italics added). As such, we investigate the ideologies that underpin trust in Bitcoin, the material-discursive practices (Orlikowski & Scott, 2015) that enact such trust, and the subject positions these ideologies produce. Furthermore, we examine what these ideologies and associated material-discursive practices reveal about how and why trust is placed in Bitcoin. We see these questions of trust as highly relevant, given the growing public concern about emerging socio-technical assemblages such as blockchain (Miranda et al., 2022). These systems are relatively new, unfamiliar, and inscrutable to many, yet they are often heralded by governments and institutions as "the technology of trust" (Goldman Sachs, 2021).

In responding to these questions, the paper makes a twofold contribution. First, we advance a conceptual understanding of trust in the context of opaque and inscrutable organizational socio-technical assemblages, exemplified by Bitcoin. To this end, we conceptualize blockchain as a novel form of organizing (Hayes, 2019), akin to markets and hierarchies (Chawla, 2020; Lumineau et al., 2021; Seidel, 2018). We also show how ideology—with its associated discourses and subject positions—functions as a critical organizing force to produce the conditions that make trust possible. Consequently, we propose an alternative ideological perspective on trust that complements existing notions of trust in algorithms, both as code and as socio-technical assemblages. Second, we demonstrate the specific ideologies that enable the production and maintenance of trust in Bitcoin. We argue that without the productive force of these particular ideologies, trust in Bitcoin would not exist. This reframes our understanding of trust as not merely rooted in neutral technical code or institutions, as traditionally conceived, but as fundamentally *produced and maintained through ideologies.*

These contributions are significant for two reasons. First, they allow us to understand how trust becomes possible, or not, in new and novel forms of organising. Second, they highlight that trust is inherently sustained through the productive force of specific ideologies, which, in turn,

generate particular subject positions. In sum, this paper argues that the production and maintenance of trust is intrinsically tied to power, ideology, and the production of subject positions. These elements serve to legitimize how power is organized and deployed to sustain trust, recursively.

Methodologically, these insights are produced through the use of Critical Discourse Analysis (CDA). To do this CDA we collected publicly available textual narratives from governmental actors, private actors, newspaper outlets, and BTC trading platforms and information outlets on three specific events in Bitcoin's lifespan: Bitcoin's entrance in the CBOE exchange in 2017, the creation of the Segwit2x Fork in 2017, and the 2022 Bitcoin market crash. We focus on these events because they represent moments of crisis and contestation regarding what Bitcoin is and does in its monetary, philosophical, and political functions. Through our CDA we identify two co-existing, and at times conflicting, ideologies that shape and sustain trust in Bitcoin. Each ideology is enacted and shaped by specific discourses and produces subject positions with regards to main actors within the Bitcoin ecosystem. Analytically we show that there cannot be trust without the *productive force of ideology* that both shapes and maintains such trust, yet is itself in need of ongoing maintenance.

The paper is organised as follows: we first cover the literature on trust in relation to technology, algorithms, and code, as well as institutions and human-based codes. We then present our research context and introduce Bitcoin and blockchain technology. Next, we turn to our research methodology and present the three events before detailing our approach to CDA and our analytical process. We then present our findings, comprising of two emerging ideologies that are sustained by discourses and mobilise specific subject positions within the BTC ecosystem, and then discuss them in relation to our research questions and current academic debates, and detail our contribution to the trust literature before concluding the paper.

2. What is to be trusted?

Why trust? Trust creates the possibility for action in situations of uncertainty—hence Luhmann's (1979) argument for its centrality in social practice. When there is absolute certainty, trust is not needed. In situations of uncertainty somebody or something trustworthy must stand in as a bridge for action to become possible—to mitigate the risk. Trust is therefore a *strong belief* in the trustworthiness of another because of, for example, their knowledge, expertise, features, properties, past behaviour, etc., which makes action possible in conditions of uncertainty. For example, we trust our doctor because we believe in her expertise, that she knows the right or best cause of action for me. Or I trust my bicycle lock to keep my bicycle safe because I believe its features will prevent a thief from taking it. Above we argued that beliefs and values are organised by ideologies. Thus, we can, for example, argue that we generally believe in, or trust experts because of our strong belief in the value and relevance of expert knowledge based on scientific evidence—that is, the interconnected ideologies of expert knowledge based on science. We saw during COVID-19 that the anti-vaccine movement contested these ideologies and as such did not trust vaccines. Likewise with climate change. The key point we want to make is that trust is a matter of *strong belief in* something or someone and, furthermore, that such beliefs and values are organised and made coherent by the productive and organising force of ideologies (Adorno et al., 1950)—ideologies that are enacted in and through certain practices (ways of speaking, doing, and organising), which are then seen or taken as legitimate (Althusser, 1972/2008). Simply put, there can be no trust without a system of ideologies—beliefs, values and practices—that renders such trust possible, first and foremostly.

How is trust produced in technologies, or, more specifically in opaque distributed socio-technical assemblages such as BTC? To explore this, we first focus on how trust in algorithms has been conceptualised as trust in the neutrality of code and present the counterargument that understands

code and technology as fundamentally political (e.g., Winner, 1980; and more recently Chun, 2008 among others). Second, since we treat BTC as a socio-technical assemblage, we proceed to position it as a fundamental mode of social organising rather than just a technological artefact and thus proceed to discuss literature on trust in institutions and in human-based organisations, and especially, the role of ideologies.

2.1. Trust in technology and algorithms

The literature on the social and political significance of technology thus far has largely emphasised the belief in its value free *neutrality*—particularly those outside of the Science and Technology Studies (STS) literature. In the case of blockchain, scholars have suggested that this neutral technology can be used to promote an ideal trust-free and de-politicized system of social interaction and exchange (see Hawlitschek, Notheisen, & Teubner, 2020, for a discussion on the limits of trust-free systems). Underpinning this neutral apolitical belief is a form of tecno-utopia (Dodd, 2016) where fallible human agency is no longer needed to execute and secure socio-economic exchanges. This techno-utopia imagines a radical 'disruption' of how we buy, sell, interact with the government, how we verify the authenticity of any product (from car parts to paintings and vegetables), in an allegedly more neutral, transparent, secure, and *trustworthy* manner. This belief is, however, not shared by everyone in the field. For example, the Bank for International Settlements (BIS, 2018:91) warned that in blockchain technologies '[t]rust can evaporate at any time because of the fragility of the decentralised consensus through which transactions are recorded' and verified.

In the scholarly literature the positive belief in a techno-utopian has been met with a "concern with the way computerized (or computationally enacted) systems organise our lives (Introna, 2016). Indeed, there is a long tradition in Information and Organisation studies—drawing on STS literature—that have argued that technological systems (as artefacts) always embody certain

interests and values, and are thus political (Winner, 1980). By being political, technologies afford possibilities that are embedded in larger systems, organizations, and practices—and as such enact a certain way of thinking and doing.

More specifically, *algorithmic* trust is traditionally captured as a form of belief or trust in the neutral apolitical technical capabilities of algorithms, or what is also called 'trust by computation' (Antonopoulos, 2014). As such it is rooted in the more general ideology of the neutrality of technology, very prevalent in society. For example, Bitcoin users place trust in Bitcoin's software code, instead of trusting institutions (e.g., a government) to produce and distribute the currency (Maurer et al, 2013). Trust here is a shared belief in the technical configuration of Bitcoin: it is decentralised and public-key encrypted, thus avoiding any attempts to corrupt the system. According to this belief system, mathematical functions or codes are more trustworthy than human-based organisations because they appear to be apolitical. Antonopoulos (2014) further argues that trust in the Bitcoin network is achieved through technical requirements, such as proof-of-work, that ensure that no central authority or trusted third party is needed in a distributed consensus network. This marks blockchain and the underlying transactions trustworthy by technological design. Interestingly, such technological design also implies that there is some sort of collective scrutiny (by a crowd of experts) over the algorithm's development and management. What seems to be believed in or valued here are both the computational elements of the algorithm and technical knowledge of peers using blockchain. What this view fails to consider is that code is never mere code (Chun, 2008; Introna, 2016) and peer-to-peer always involves a whole host of implicit and sometimes explicit intermediaries (Mackenzie, 2018). Instead of being apolitical, it has been argued that this form of "algorithmic trust" is underpinned by the replacement of one form of politics with a more complex one (Introna and Nissenbaum, 2000; Introna and Pecis, 2019; Introna, 2016).

This ideology, or belief system of trust reliant on technical capabilities has contributed to the pervasiveness of narratives that blockchain is a "trust machine" (Berkely, 2015), or as simply "trust-free" (e.g., Schweizer et al. 2017). Whilst from a purely mathematical stance (i.e., formal verification of an algorithm) such a belief might be arguable, we would argue that the blockchain always involves a 'black boxed' politics. This is because blockchain and their applications (such as Bitcoin) are socio-technical systems or assemblages; as such, the production of trust is more complex than captured in the pervasive neutrality ideology (Auinger and Riedler, 2018). For example, Swan and Brunswicker (2018) highlight that algorithmic trust is based on two essential properties of blockchain networks: the real-time transactability of assets on blockchain systems and the real-time information climate about network activity. Together, they produce a new class of digital materialized trust – algorithmic trust. Algorithmic trust thus cannot be discerned from the digital practices that sustain trust in the code and in its functioning. In scholarly literature, blockchain are increasingly understood, not merely technically, but rather as a form of organising (Chawla, 2020), whereby the algorithm is placed within an organisational context of peer-to-peer networks of developers, exchanges and blockchain maintenance (Lustig and Nardi, 2015) vis-à-vis the increasing opacity caused by their technical complexity (Kellogg et al., 2020).

The opacity of peer-to-peer networks is well known, and literature that explores trust in sharing economy platforms has been widely travelled over the past decades (i.e., Clemons et al., 2016; Gefen and Pavlou, 2012; McKnight et al., 2002; Mittendorf et al., 2019; Pavlou and Gefen, 2004; Mazzella et al., 2016). In this context, trust is conceptualized as an individual belief or disposition that affects trusting intentions towards another individual or peers (e.g., the seller/s; see Gefen, 2000, Pavlou and Gefen, 2004; Turel et al., 2008), or the platform intermediary (Verhagen et al., 2006; Möhlmann, 2021; among others). In other words, trust is seen as "a psychological state [or belief] comprising an intention to accept vulnerability based on positive expectations of the

intentions or behaviour of another (Rousseau et al., 1998)" (Möhlmann, 2021:1), built on previous experiences and exchange histories (Komiak and Benbasat, 2006; Pavlou and Gefen, 2004; Pavlou and Dimoka, 2006).

Recent research has however critiqued this individualised and often transactional way in which digital trust is conceptualised (Sherchan et. al 2013). An alternative view considers digital trust as comprising both individual and collective social practices that co-create the technology as such. This is particularly important in relation to blockchain as socially situated technological artefacts: algorithms are not simply a technology that instantiates human trust but can be seen as "a new concept of trust that emanates from the use of the computational system itself as a replacement for traditional mechanisms of governance, control, and interaction" (Swan and Brunswicker, 2018:2). In short, recent literature on algorithmic trust (as a specific form of digital trust) suggests that what is interesting about technologies underpinned by algorithms, such as blockchain, is not that they represent human trust, but that they seem to replace human trust. Lustig and Nardi's (2015) conceptualisation of algorithmic authority contributes to such direction in scholarship and sees trust in algorithms as directing human action, instead of trusting (or preferring) human authority.

In this paper, we appreciate the socio-technical complexity of blockchain and suggest that to understand issues of trust in algorithm-based technologies we need to go beyond a focus on the ideology of the neutral algorithm as a mathematical function and thus a source of trust to acknowledge how algorithm-based technologies such as blockchain, as socio-technical assemblages, work to produce trust, or be taken as trustworthy. Thus, we are not merely interested in how trust in mathematical functions and digital practices operates, but rather in *the processes that produce trust* in socio-technical assemblages, more broadly. In this sense, we do not contend that traditional practices of governance are now replaced by a new form of epistemic

authority (e.g., algorithmic authority, Lustig and Nardi; 2015); nor do we want to argue that trust placed on algorithm-based technologies is preferred over human trust; and finally, we do not argue that trust in blockchain is a combination of the technical and the organisational (Chawla, 2020) either. Thus, we want to suggest that trust is not *in* the technology (or material arrangements), nor *in* the social arrangements, nor *in* some sort of a combination of them. Rather we want to step back and argue that trust is not in the entity, as such, but rather enacted and maintained through specific ideologies, or belief systems, that also sustain it. Such ideologies, we suggest, are in turn enacted and shaped by discourses that mobilise specific subject positions to sustain it. In the next section, we focus on the use of social codes and institutions and its role in organising trust, highlighting the role of ideologies in sustaining trust in and through institutional arrangements, such as codes of conduct.

2.2. The ideological nature of trust in codes

The idea of depoliticization of interactions through 'codes'—such as algorithmic codes discussed above—is not new, nor does it relate exclusively to technology. Rather, it has been at the heart of social debate and theory for some time (Introna and Pecis, 2019). Weber suggested that codes of conduct within bureaucratic organisations aspire to promote neutrality and an ethos of due process, underpinned by a mutual acceptance of rational conduct (Du Gay, 2000). In so doing, the bureaucratic code of conduct removes personal interest, biases, and preferences in pursuit of a depoliticised (and by definition depersonalised) order (Kallinikos, 2004). Yet, history has shown that the ideology of the bureaucratic code as neutral produces darker consequences, such as the removal of responsibility and accountability of individuals operating through that code (Arendt, 1963).

The ideology of neutrality of the bureaucratic code becomes relevant to our analysis as Bitcoin purports to eliminate, through disintermediation, untrustworthy (and wasteful) third parties.

According to Bitcoin enthusiasts, financial institutions and intermediaries have proven to be untrustworthy despite operating through codes of conduct, thus their elimination or replacement with assumed neutral information and communication technology (ICT) is viewed as necessary. The idea of depoliticising and disintermediating social interaction in order to create institutional arrangements that can be trusted works in both cases (of bureaucratic, human-based code and algorithmic code). That is, there is a deep rooted system of belief (or ideology) that code (be it algorithmic or institutional) can remove the distortions produced by personal idiosyncratic biases, interest, and values (in the case of bureaucracy), and self-interested political institutions (in the case of algorithmic code). Such an ideology is designed to maintain, change or reinforce the currency and legitimacy of social orders, and in particular its trustworthiness.

Both bureaucratic and algorithmic codes underpin contemporary societal institutions—legal, political, etc., what Barrett et al. (2005) call 'expert systems.' The way these systems are organised enacts a form of abstract trust in its processes (Mueller & Whittle, 2015) based on the perceived risks and associated expectations about the conduct of others in the organisation. Expectations might be unrealised, and people might decide to distrust the organisation. Decisions about whether to trust or distrust a system (an institution, a state, or organisation) are normally made upon previous experiences of interacting with the system. Yet, there is often only incomplete and unreliable information available for making such trusting decisions – a context that resembles closely that of Bitcoin. What makes system trust work then?

This is an important question to address, as organisational actors are surrounded by institutional context irrationalities (in our case, involving volatility, technology diffusion, institutional crisis, and trust erosion) which affect their belief in the trustworthiness of the system. Actors make sense of such reality through engaging in discourses and rhetorical claims that create a coherent vision (Wang and Swanson 2007), providing legitimacy to the technical solution at stake (Barrett

et al., 2013). Moreover, legitimising discourses vary both across different groups involved in the technology (Heracleous and Barrett 2001; Suddaby and Greenwood 2005), and over time. We argue that different groups, who have specific goals and interests, attempt to provide legitimacy to Bitcoin by mobilising discourses and subject positions that enact specific ideologies that sustain trust in Bitcoin, albeit its volatility and black-boxed politics. In other words, actors justify and rationalize their belief in the trustworthiness of Bitcoin by developing discourses that construct specific ideologies to produce and sustain trust. Ideologies and discourses are always enacted in material-discursive practices (Mouffe, 2004), albeit at times these practices are not necessarily institutionalised (Barrett et al., 2013). These discursive and material practices make trust in the technology possible, for example by supporting (1) trust in the structural properties of the system, and (2) trust in the trust of others. The latter refers to "the trust that other people or institutions have conferred to that individual, who provide the necessary credentials for that individual to be trusted by third parties" (De Filippi, 2020:4). We believe or trust the assistant at our bank to be its genuine representative and to act according to established codes of conduct and regulations. Thus, we also believe in, or trust the functioning of rules and codes of conduct around which the institution is operating (e.g., a set of protocols regulating data sharing and protection, or specific rules on how mortgages are calculated). We have a sustained belief in the working of systems, albeit knowing little about them (Barrett et al., 2005). Luhmann (1988 and 1979) calls this underpinning mechanism trust in 'the security of functions', i.e., we expect the system to function as anticipated. System trust relies on a certain belief or 'leap of faith' that the system will perform as expected (Möllering, 2001; Mueller & Whittle, 2015). Underpinning this form of trust is the belief that systems are fairly predictable, neutral, and free from political intentions. In short, we trust these systems function exactly because they are disengaged from personal aims of the participants, as argued earlier. According to this ideology (of neutrality/apolitical nature of the code), one does not need personal trust in those holding the

authority over the system but trusts the existence of systems of control (that the code will be respected, and violations sanctioned), such as internal controls and external regulations, e.g. laws, policies, contracts, codes of conduct, sanctions and disincentives (Sitkin & Pablo, 1992; Weibel et al., 2016). These controlling norms outline what is considered acceptable versus unacceptable behaviour, and sanction untrustworthy conduct or actors (Bachmann et al., 2015; Dirks & Ferrin, 2001; Gillespie & Dietz, 2009). Where systems of control are in place, the risk of untrustworthy behaviour is reduced (Bachmann & Inkpen, 2011), making these controlling mechanisms crucial for building trustworthiness in a system or institution.

However, such controlling norms and codes that sustain belief in the trustworthiness of systems are not always present. This is often the case for socio-technical assemblages, such as Bitcoin, that are highly complex and might warrant avoiding the risks associated to them because they do not have traditional formal controlling norms defining the punishment of incorrect actions, nor do they have familiar representative employees (in the traditional sense) that we interact with, and which can be trusted. These socio-technical assemblages raise the question of how trust is possible and how it is maintained when governed through algorithmic code that might be unfamiliar to us, and where a sense of prior relationality seems to be absent. How can we trust such complex systems after, and perhaps despite of, instances of fraud and, in the case of Bitcoin, recurrent market crashes?

Thus, more relevant to our case is that trust is not only maintained through controlling norms which seem absent in BTC, but it also relies on the trust that we have in others, what Luhmann (1979:92) refers to as 'trust in trust' as the rational basis of system trust: individuals trust others' rational behaviour. Trust in trust allows for the social order to be maintained; its erosion disrupts and alters social norms (Bachmann et al., 2015), with detrimental consequences. There are numerous forms of trust in trust, from the trust in our own trust, to trusting the choices of others,

or trusting that others trust us (Luhmann, 1979). What is common to all these forms is an element of reflexivity, which implies a double risk, or risk flowing both towards others and us. As Barrett et al. (2013) point out, the different levels of belief systems, namely deep structures, encoded in actors' cognitive schemata and manifested in discourses exist in a recursive and, we add here, reflexive relationship. Because of this reflexive and recursive relationship, struggles among meanings and power imbalances in sustaining dominant views and interests are played out.

Overall, the literature suggests that trust is typically understood as a belief or trust *in something*—whether technology, algorithms, experts, institutional arrangements, the trust of others, or a combination of these. We want to argue and show that any set of beliefs or trust in something needs to be enacted and continuously reenacted, or materialised. That is to say it is not a property of something but rather the ongoing coming into being of something—as such, it is always at risk. To foreground this coming into being of trust we want to highlight the role of ideology as a productive force that orders beliefs, values, etc. into a coherent way of being—specifically, its ongoing enactment through interrelated discourses, subject positions, and material arrangements. More specifically, to explore the ideological production of trust in BTC and its associated discourses, we turn to texts as discursive practices (Barrett et al. 2013). Texts allow us to see how ideologies and discourses are used by different actors to sustain their own aims and interests, thus bringing to the fore different power-laden subject positions. Importantly, this ideological space is always a contested space where ideologies compete, overlap, and so forth. To explore the production of this ideological space, we will turn to the methods of analysis offered by critical discourse analysis (CDA).

3. Research design: CDA and its empirical context

To address our research question—of how trust becomes produced and maintained in complex socio-technical assemblages—we focus on the phenomenon of Bitcoin as an instantiation of blockchain technology. The reasons behind this choice are twofold: first, Bitcoin applies blockchain technology in a way that allegedly eliminates the need for personal and institutional trust (Goldman Sachs, 2021), thanks to its technical properties of decentralization and disintermediation. Second, Bitcoin is often taken as the original development of blockchain technology, which exemplifies many of the central characteristics that make blockchain attractive from a technical viewpoint—especially in terms of issues of trust.

From a technical viewpoint, Bitcoin is "an electronic payment system based on cryptographic proof instead of trust, allowing any two willing parties to transact directly with each other without the need for a trusted third party." (Nakamoto, 2008:1). The Bitcoin Network was released, as proof-of-concept software, in January 2009 by Satoshi Nakamoto (a pseudonym). It is a digital, decentralized, and deregulated, partially anonymous, peer-to-peer networked currency, with low transaction costs. Bitcoin is designed to enable irreversible transactions, to have a clear path of money creation over time (based on scarcity and the maintenance of value), and a public transaction history (Böhme et al., 2015). Transactions are validated through the mining process: a block or batch of transactions is added to a chain of transactions (a blockchain) and then distributed to the network of nodes. Nodes are any computers that connect to the Bitcoin network. These then agree the proof-of-work—the solution of a complex mathematical puzzle—and then add the new blockchain to their copies of the ledger (BIS, 2017). Miners that solve the complex puzzle—and win the right to add another block to the blockchain—receive a reward of 3.125 BTC, and it will continue to be so until 2028 when it will halve again, along with the transaction fee paid by users. These features that frame Bitcoin as a technically trust-less and

decentralised system make it an interesting case for unpacking notions of trust in this rapidly changing socio-technical ecosystem.

As mentioned in the introduction, trust in Bitcoin seems remarkably stable considering the last two years of tumultuous market fluctuations, instances of fraud, and crashes. It is issues like these that bring us to question why and how trust in one of the largest cryptocurrencies in the market is produced and maintained. In the case of Dogecoin's rollercoasters and FTX's collapse and bankruptcy at the hands of Sam Bankman-Fried, system trust in blockchain and cryptocurrencies seems to outlast power abuse scandals showcasing market vulnerability to powerful actors.

Our study is situated within the critical organisation studies tradition (Hardy and Phillips, 1999) and specifically employs Critical Discourse Analysis (CDA) (see Fairclough, 1992; Chouliaraki and Fairclough, 2010) to investigate the discourses and ideologies underpinning trust in Bitcoin. It is important to note that discourses are shaped by and reflect dominant ideologies—differently stated, they are in a co-constitutive relationship. For instance, the discourse around capitalism promotes the ideology of free markets and consumerism, and vice versa. In our case specifically, we are interested to uncover or reveal the material and discursive enactment of ideologies that make trust possible (Kress and Hodge, 1979). As suggested above, ideologies functions as productive forces that organizes opinions, attitudes, and values—that is, they promote and legitimise a curtain way of thinking about and acting in the world (Adorno et al., 1950). In our case, the opinions, attitudes, and values, or manners of thinking and doing that enable actors to take and interact with BTC *as trustworthy*. This ideology is not just enacted in and through discourses, it is also materially enacted (Althusser, 1972/2008; Mouffe, 2014; Orlikowski & Scott, 2015).

To reveal this material discursive enactment of ideologies we deploy CDA. To do our analysis we collected 81 publicly available texts from governmental actors, private actors, newspaper outlets, and BTC trading platforms and information outlets (see Table 1). These texts where selected by virtue of their focus on BTC as a technology and as a currency, and their concerns around broader access to the coin. Examples of keywords used in the search for texts are 'Bitcoin', 'blockchain', 'Bitcoin crash', 'Segwit2x', 'BTC CBOE'. The texts cover a range of documents such as policy documents, newspaper articles, informational webpages (i.e., explaining what Bitcoin is and how cryptocurrencies and the blockchain work). We centred our focus on *three significant events* regarding Bitcoin's popularity and development: the introduction of Bitcoin in the stock market through the Chicago Board Options Exchange (CBOE) on 10th December 2017; the Segwit2x Fork in 2017; and the most recent BTC crash in summer 2022. The timeframe of the texts is between 2015 and 2024 (with exception of Nakamoto's 2008 white paper). Table 1 lists the corpus of text divided by source: while governmental and private actors produced fewer documents on the above events, newspapers and BTC trading platforms and information outlets have covered the events more prominently. Texts from governmental and private actors covered overarching topics and information on Bitcoin and the blockchain and contributed to the emergence of the findings presented in section 4. The three events were selected because they reveal moments of contestation, where ideas of trust, communities and institutions are challenged and shaped through discourse. These, in turn, reveal underlying ideologies that shape and sustain trust in Bitcoin.

The next sections present the three events. We then move on to further elaborate on our analytical approach, CDA.

Table 1. Corpus of text

Source	Number of texts
Governmental actors	6
Private actors	8
Newspaper outlets	16
BTC trading platforms and information outlets	51
Total	81

3.1. Bitcoin and the CBOE Futures Exchange

Bitcoin derivatives first entered the trading zone on December 10th, 2017, via CBOE (Chicago Board Options Exchange) Futures Exchange LLC. CBOE Global Markets owns the Chicago Board Options Exchange (the largest U.S. options exchange) and BATS Global Markets. The CME Group followed on December 18th, 2017, launching Bitcoin futures trading. In short, a Bitcoin *futures contract* is an agreement to buy or sell bitcoins at a prearranged price at a set time in the future. In other words, if one believes that the price of bitcoins currently trading at e.g., £5,000 will go up to £5,200 in two months and commits to paying now £5,200, it means they bought a futures contract. If their hunch was right and at the time of the expiration date of the contract the price was higher than £5,200, then they made a profit, and vice versa, a loss if the price is lower. The trading of Bitcoin Futures opened to institutional and retail investors to trade bitcoins —and in a way speculate on the currency without it being affected. In fact, one does not need to own bitcoins to buy Bitcoin Futures. This is an important event as the introduction of Bitcoin Futures on well-known and regulated futures markets has allowed

institutional investors to trade Bitcoin Futures in a familiar and regulated environment, in a more traditional way. More importantly, this event generated a lot of debate about the trustworthiness of Bitcoin.

3.2. The Segwit2x and the Bitcoin Cash hardfork

On August 1, 2017, Bitcoin saw a split into two derivative currencies: Bitcoin classic and Bitcoin Cash. The split came after years of debate around whether the limit of one megabyte per 10 minutes—introduced in 2010 to prevent potential attackers from overloading the network—should be removed. At the centre of the debate was the idea that if Bitcoin grew in demand too rapidly, it would have resulted in its centralisation and shift to corporate control. At the basis of the Segwit2x proposal was the intention to upgrade Bitcoin by altering how some data is stored in the network and increasing the network's block size to 2MB. The move towards the 2MB block size was related to Bitcoin's increasing popularity and the consequent exponential increase of average transaction fees, to a peak of more than $5 in June 2017 (Fortune, 2017). This proposal for scaling Bitcoin's transaction capacity was not the first one within the community, but it was the first to be put forward by members of the network who were not Bitcoin core developers. This proposal was supported by many of the network's mining pools, by Bitcoin start-ups (e.g. Coinbase, BitPay and Blockchain), and by some core developers such as Gavin Andresen, former lead maintainer. Yet, the proposal saw the opposition of almost all Bitcoin core developers responsible for software maintenance, many node operators, and users. We chose this event as it shows the many ongoing power relations and tensions within the Bitcoin community and their relevance to questions of trust.

3.3. The 2022 Bitcoin crash

In July 2022, BTC plummeted below $16,000, after reaching $64,000 in 2021 (Partz, 2022). Indeed, from a market cap of $736B in July 2021, in 2022 BTC's current market cap stood at

around $421.37B. The 2022 crash in crypto markets was one of the consequences of the collapse of Terra, an algorithmic stablecoin "designed to support a stable 1:1 peg with the U.S. dollar through blockchain algorithms rather than equivalent cash reserves" (Partz, 2022), meaning that algorithmic stablecoins are not backed by assets. This had the domino effect of reducing confidence in crypto markets, and of fuelling lending uncertainty. The collapse of Terra highlighted algorithmic stablecoins' lack of transparency regarding reserves and raised questions regarding the trustworthiness of algorithmic stablecoins in crypto markets (Hu, 2022).

3.4. Critical Discourse Analysis

As suggested above, we investigate the production and maintenance of trust, in BTC, by uncovering the ideologies shaping and sustaining it—specifically the material and discursive enactment of such ideologies. To do this, we draw on Critical Discourse Analysis (CDA) following the early work of Fairclough (1989 and 1992), which is in turn influenced by the work of Michel Foucault (1972). Foucault defines discourse as 'practices which form the objects of which they speak' (Foucault, 1972: 49): discourses do not just speak of the phenomenon (Bitcoin in our case), they also participate in the enactment of that very phenomenon. Along with social constructionist principles, language in CDA is understood as social practice (Fairclough, 1989; Fairclough & Wodak, 1997) and, as such, a vehicle for power which can be used to sustain and organise social life (Alvarez, 2002; Wodak & Meyer, 2009). In our case, language is entwined with social practices and broader political and institutional structures (Pozzebon et al., 2016), while also being a vehicle for power that can be used to sustain and organise Bitcoin as a trustworthy socio-technical assemblage. Thus, employing CDA specifically allows us to move "beyond the formal structure of language as an abstract system, toward the practical interaction of language and context" (Fowler, 1996: 10). In the three events outlined above, we investigate the ways in which specific ideologies become enacted discursively and as such produce the

conditions for trust to be produced and maintained in Bitcoin. Central to the doing of CDA is the co-constitutive relationship between discourse and ideology as "[d]iscourse is seen as a means through which (and in which) ideologies are being [produced and] reproduced" (Blommaert and Bulcaen, 2000: 450).

More specifically, we do our CDA by drawing on Fairclough's (1992) framework of text analysis, discursive practice, and social practice to approach and analyse data, and to understand the discursive and ideological practices underlying trust in Bitcoin. We first coded the texts by identifying words and phrases used in relation to the concept of trust. Then, following Fairclough's dimensions of discourse, in our analysis we addressed the following concerns:

1. At the text level, we asked what discourses of trust are present within the BTC ecosystem. This was done by focusing on patterns and properties in language used in relation to trust.
2. At the second level of analysis, that of discursive practice, we focused on how the discourses identified in text analysis were employed in the texts to produce and maintain trust in BTC. This level allowed us to identify subject positions (see Table 2 below) for each discourse emerged in the text analysis. Subject positions here are understood as the roles or identities that actors are encouraged or required to assume within a particular discourse (Fairclough, 1989). Such subject positions, offered by discourse, are normally aligned with the enactment of the ideological goals (producing trust in our case).
3. At the third level of analysis, that of social practice, we identified the ideologies sustaining trust in BTC. This was done by looking at how the discourses of trust are employed by actors in the BTC ecosystem, and how both discourses and subject positions are mobilised to maintain trust in this context.

We present our findings in the section below. Specifically, we identify two ideologies, each shaped by specific discourses around trust in BTC. The discourses presented mobilise specific subject positions with regards to Bitcoin enthusiasts, traditional institutions, and the blockchain.

4. Revealing the ideologies that produce and maintain trust in Bitcoin

Through the analysis of three significant events for the cryptocurrency (BTC entering the CBOE Futures Exchange; the 2017 Segwit2x Bitcoin Cash hardfork; and the 2022 BTC market crash), we identify two ideologies, in turn shaped by four discourses of trust and mobilising specific subject positions in relation to actors within the BTC ecosystem: Bitcoin enthusiasts, traditional institutions, and the blockchain.

The emerging ideologies are that of *technical sovereignty*, whereby users adhere to notions of technical utopianism; and what we have named *peer-to-peer neoliberalism*, whereby BTC is seen as a political project supported by the individualization of responsibility and risk. We elaborate on our findings and present each ideology, its shaping discourses and underlying subject positions in the following sections. The findings are summarised in Table 2.

Table 2. Ideologies, discourses, and subject positions

Discourses		**Ideologies**			
		Technical sovereignty		Peer-to-peer neoliberalism	
		BTC as neutral	*BTC as universally accessible*	*BTC as a political and exploratory project*	*Freedom from and lack of trust*
Subject positions	*Enthusiasts*	Technical domain experts	Technological visionaries	Revolutionaries	Instigators of change

	Traditional institutions	Law and order	Cautious sceptics	Slow reformists	Control- and surveillance-driven
	Blockchain	Technical tool for legitimacy	Democratic tool for legitimacy	Individual asset	Object outside of any power grabs

4.1. Technical sovereignty

The first ideology we identify in the data is that of technical sovereignty. Within this ideology, we note the emergence of specific subject positions regarding what we call Bitcoin enthusiasts (self-positioned domain experts without official authority or traditionally recognised legitimacy, who support and believe in the BTC project), traditional institutions (such as banks and national governments) and the blockchain itself (as a technological device, a code, as well as an ecosystem). This ideology is sustained by two complementary discourses, namely trusting the *technology to be neutral* and trusting BTC to be *universally accessible*. Blockchain technology and BTC in particular are trusted by virtue of their technical features, and are considered more trustworthy, neutral, and less fallible than traditional institutions and middlemen. Bitcoin is seen as a techno-utopian project (Dodd, 2018), where trust lies in the neutrality of the (algorithmic) code, as Nakamoto alludes to in their paper:

> "What is needed is an electronic payment system based on cryptographic proof instead of trust." (Nakamoto, 2008, p.1)

According to the ideology of technical sovereignty, BTC is a technical way to create a payment system that does not rely on trust, hence is trust-free. Enthusiasts position BTC as an ideal and technically superior payment system that a) affords, by design, technical possibilities that are not

realisable in traditional financial exchanges, i.e. card transactions, b) is free from temporal, institutional, and monetary constraints, c) "represents a shared record of the truth" (IBM, 2023) and d) have code and blocks that are accessible to all. As Binance (2024) puts it, "[i]n cryptocurrencies, there isn't an organization. You, your friends, and thousands of others can act as your own banks by running free software". What is advocated here is a techno-utopian vision that places data (code) as the ultimate truth, that is transparent, neutral, democratic and therefore trustworthy.

4.1.1. BTC as neutral

We find this ideology is sustained by two interconnected discourses. The first highlights the neutrality of BTC. In this discourse, BTC enthusiasts are positioned as technical domain experts who have the technical know-how when it comes to the workings of the blockchain and cryptocurrencies. Among them are miners and code maintainers, who ensure collectively the transparency and functioning of the code, as well as enthusiasts involved in cryptocurrency exchanges.

> "The Bitcoin network has never been hacked. Its open-source code has been scrutinized by countless security experts and computer scientists. Bitcoin was also the first digital currency to solve the double-spend problem, making "trustless" peer-to-peer currencies a reality. Further, all Bitcoin transactions are irreversible." (Coinbase, 2023b)

The neutrality of BTC is possible thanks to the alleged disintermediation and transparency that the cryptocurrency affords "[…] that leaves no room for manipulation of transactions, changing the money supply, or adjusting the rules mid-game." (Coinbase, 2024). This in turn positions the blockchain as a technical actor to legitimately enact the BTC project.

Such legitimisation particularly emerges in relation to the creation of Bitcoin futures. Paradoxically, this seems to be an attempt to reinsert BTC into traditional institutions, by

> "[…] establishing the digital currency as a legitimate asset class. The derivatives allow institutional investors to buy into the cryptocurrency trend and could pave the way for a bitcoin exchange-traded fund […]" (CBSnews.com, 2017)

Trust as afforded by the neutrality of code is however contested by traditional institutions, wary of the market implications of BTC integration in the current financial system and thus positioned as the actors that must concern itself, and secure law and order:

> "Their [cryptocurrencies] price can vary quite considerably and they could theoretically or practically drop to zero," he [Deputy Bank governor Sir Jon Cunliffe] said. "The point, I think, at which one worries is when it becomes integrated into the financial system, when a big price correction could really affect other markets and affect established financial market players. "It's not there yet, but it takes time to design standards and regulations." (BBC News, 2021)

The introduction of BTC in official trading channels represents an important moment of contestation of the assumed trust-less technology. What is doubted is BTC's reliability when integrated in the existent financial system, and thus its capacity to affect significantly other financial market players. Yet, according to BTC enthusiasts, it is just a matter of maturity (and time) for the BTC ecosystem to become seen as reliable and trustworthy:

> "[…] people can trust the technology more with the passing of time. Each month people transact hundreds of millions of dollars worth of Bitcoin." (Bitcoin.com, 2018)

Therefore, within the discourse of BTC as neutral, we see three different actors occupying specific subject positions: enthusiasts are positioned as domain experts, traditional institutions assume the place of law and order, and blockchain as a technical tool for legitimacy.

4.1.2. BTC as universally accessible

Here we see the emergence of a second discourse of *universal accessibility* that shifts the blockchain position from a tool for legitimacy, merely in technical terms, to one where legitimacy (and trustworthiness) is guaranteed by its democratic potential for technical universal access, and where BTC enthusiasts are positioned as technological visionaries of a better technological future to come thanks to the BTC project.

It is interesting to note that common to both discourses is the lack of familiarity with BTC, based on direct experiences of and interactions with its access points (Giddens, 1990). These are, according to Luhmann (1979), preconditions for trust to be formed; without direct experiences of the system - or the organisation through its access points– people need to turn to 'trusting that others trust' or that 'the system will work as expected'. This is particularly important in the case of BTC as trust is not built on familiar relations and needs to be enacted on a global level, involving actors that have no familiarity or knowledge of each other. Thus, the shifting subject position of the blockchain at the hands of enthusiasts (and traditional institutions in their contestation of trust) brings out how trust is built on a weak discourse of technical neutrality and democracy that are highly questionable.

This second discourse thus relies on blockchain to be a risky object (subject position) that is nevertheless potentially universally accessible, therefore democratic in its essence—and as such not exploitable by the few or the powerful. According to enthusiasts, BTC operates at a global level. This means that access is given to all on an equal basis. In other words, enthusiasts position the blockchain again as a tool for legitimacy, this time based on its democratic potential and accessible nature. Indeed, enthusiasts claim that the blockchain is open to everyone who can directly operate on free and accessible software:

> "This [Decentralised Finance] has the potential to create more open, free, and fair financial markets that are accessible to anyone with an internet connection." (Coinbase, 2023c)

Enthusiasts are keen on the prospect of a form of organisation based on open technology which is, in principle, directly accessible to most. This is unsurprising, given the rise of ideologies that promote disintermediation and technical sovereignty as a neoliberal (capitalist) project, in what others have called platform capitalism (Langley & Leyshon, 2017). Thus, whilst disintermediation is for some a democratic way of economic exchange (Schor & Attwood-Charles, 2017), where accessibility is granted to all as we have seen in the quotes above, for others it is a sign of the rapid expansion of the neoliberal ideology in a new form, as we show in the next section. We find these two very different visions of disintermediation (Murillo et al., 2017; Pasquale, 2016) to be underpinned by two different ideologies. As such, both these visions and ideologies of disintermediation bring out the non-neutrality and inherent political nature of all code. Overall, this discourse brings out that whilst blockchain is still positioned as a democratic tool for legitimacy, traditional institutions seem to be placed as cautious sceptics and enthusiast as technological visionaries. Together, the two discourses, which are part of the ideology of technical sovereignty, produce and sustain trust and generate specific subject positions, which reflect different nuances of the ideology (neutrality of the code and universal accessibility of the technology). We now turn to discuss how this (technically) democratising ideology coexists with an ideology that puts individual risks and benefits above the democratic sentiment.

4.2. Peer-to-peer neoliberalism

Our analysis identifies a second coexisting ideology that we call *peer-to-peer neoliberalism*. Sustaining such ideology are two complementary discourses: *BTC as a political and exploratory project*, and *freedom from and lack of trust in authority* as a motivator to engage in the BTC

ecosystem. Common to both discourses is a democratic ideal that relies on decentralisation and alleges freedom from intermediaries whilst promoting financial opportunities for all. Indeed, the notion of 'decentralised consensus' at the core of the blockchain often emerges in the data as a placeholder for democratic access to BTC:

> "...from a centralized system of hierarchy to a decentralized system of consensus" (Kraken, 2022).

Unlike the ideology of technical sovereignty, where decentralised consensus is understood from a technical viewpoint as offering universal access, the ideology of peer-to-peer neoliberalism seems to suggest that decentralised consensus can also be a political project that brings democracy back in not by virtue of its technical superiority, but as a political alternative. Yet, these democratic promises are based on highly individualised risks and opportunities, not only due to the lack of state-wide institutions that mitigate risks, but also because trust becomes an individualised project rather than a collective endeavour. Trust in Bitcoin is rooted in a particular ideological consensus of individual agency (as opposed to trusted institutions) and a relatively fragile community (with its disputes and potential forks), individualised responsibility, and sense of care for the BTC political project rather than community members.

As such, what is at work here is an ideology that goes beyond combining socio-technical and capitalist business practices of platform capitalism (Langley & Leyshon, 2017), for which such platforms are understood as neutral and egalitarian (Gillespie, 2010). What we see emerging with Bitcoin is an ideology of platform capitalism that is also neoliberal and where the term 'community' is deprived of its essence.

4.2.1. BTC as political project

In building a notion of community, BTC enthusiasts construct a sense of 'we' (which did not figure in the ideology of technical sovereignty) and, particularly during the Segwit2x fork event, a concern that the BTC community might split in different directions and impact BTC's political aims. Such preoccupation does not extend to members of the community, but rather remains focused on the possibility of the erosion of BTC's ideology:

> "Unfortunately, it is clear that we have not built sufficient consensus for a clean blocksize upgrade at this time. Continuing on the current path could divide the community and be a setback to Bitcoin's growth. This was never the goal of Segwit2x". (Mike Belshe at bitgo.com, 'segwit2x final steps', 2017)

Its underpinning discourse thus frames BTC not simply as a technical solution, but as a political and exploratory (given its still-emergent configuration) project in its own right. The promise of democracy is accompanied by an individualised discourse of responsibility and risk awareness, where one is alone in a 'community' of individuals:

> "DYOR stands for Do Your Own Research and is a common phrase used by cryptocurrency enthusiasts. […] you shouldn't take information from a single source as the truth". (Binance, 2022d)

> "Even if you had access to every bit of information available, a sudden black swan event, hack, or tweet from a high-profile individual could cause prices to plummet. This is why it's crucial to plan ahead and to take steps to mitigate your losses should some kind of sudden crash occur". (Coinbase, 2023b)

Enthusiasts of this political project are positioned as revolutionaries who aim to transform the way we conduct our social lives:

> "We're on a mission to educate the masses on the transformative potential of cryptocurrency and blockchain technology." (Binance, 2023)

Traditional institutions on the other hand are positioned as slow reformists, limiting the potentiality of the revolutionary project. Their power is used to tame such revolutionary project. Discussing governance challenges in the cryptocurrency ecosystem, Wilkins, external member of the financial policy committee for the Bank of England, stated that

> "As with traditional finance, these issues [governance and concentration of power], and the financial losses that inevitably accompany them, are bound to eventually lead to a punishing loss of trust in this new ecosystem. Many people have already lost savings through fraud, scams and outright theft. Growth in the number of crypto scams in the UK has spiked so much in recent years that they are now the most common type of scam reported to the Financial Conduct Authority (FCA) (Wilkins, 2022)

Emerging in this discourse is the subject position of blockchain as a property, an asset that is individually owned and managed, that can be lost, stolen or destroyed due to unforeseen events.

4.2.2. Freedom from and lack of trust in authority

The neoliberal nature of the discourse of BTC as a political project is also present in the second discourse we identified, namely freedom from and lack of trust in authority as a motivator to engage in the BTC ecosystem. While both discourses see BTC as bringing the promise of 'true' democracy through technology, here BTC enthusiasts are positioned as instigators of change promoting freedom from and lack of trust as a gateway for a different financial and economic system. The BTC community is based on decentralised consensus characterised by the simultaneous acknowledgment that (a) nobody is in charge, and (b) that certain groups can influence Bitcoin functions regardless of point (a). Such community declares itself anti-

establishment whilst recognising the presence of specific roles (core developers, coders, miners, investors, etc.) that will inevitably influence the community:

> "There are (...) certain groups who can exert influence over the way Bitcoin functions through various means. (...) Developers (...) Miners (...) have the power to "vote" with their hardware and choose which Bitcoin software to support. (…) Users: That's you." (Bitcoin.com, 2018)

The lack of clear, visible, and traditional authority as a factor enabling trust in BTC is evident in the texts we analysed:

> "Bitcoin is sovereignty (…) Bitcoin will give financial freedom back to the people…There will be a shift in the structure of enterprise, in the way we interact, in the way we voice our opinions, and in the way we fuel our action." (Bitcoin declaration of independence, 2014)

> "Bitcoin is inherently anti-establishment, anti-system, and anti-state. Bitcoin undermines governments and disrupts institutions because bitcoin is fundamentally humanitarian…Bitcoin does not pander to power structures, it undermines them." (Tourianski, 2014)

BTC is trust-free in that blockchain's open and decentralised nature provide a rationale not to trust traditional institutions and financial systems, as well as reinforcing the lack of need (and desire) to establish any formal authority or organised hierarchies within the BTC ecosystem:

> "Bitcoin needs no entities of authority to acknowledge it, incorporate it, regulate it, and tax it…Bitcoin is meant to function outside of regulatory systems." (The Bitcoin Foundation Inc., 2016)

At stake is the deprivation of the state as a safeguarding institution that is no longer necessary vis-à-vis the emergence of a 'black-holed' community, with no safety net. Risk awareness is framed as empowering by enthusiasts– anyone can trust themselves to make the right decisions

and collect the right information, and shouldn't trust any other source, person, or organization to dictate how to operate in this ecosystem.

These coexisting discourses of BTC as a political project and freedom from and lack of trust highlight two aspects of a neoliberal ideology of platform capitalism that has individualistic community tones, alongside claiming freedom from powerful individuals. Yet, as the quotes above have illustrated, such freedom from powerful institutions and individuals is contradictory, as BTC volatility depends on 'black swan events' and a 'tweet from a high-profile individual [that] could cause prices to plummet' (Coinbase, 2023b).

Within the discourse of BTC as political project, enthusiasts are positioned as revolutionaries in a broad political sense: BTC is seen as a project aimed at helping "the unbanked, the privacy-conscious, computers or people in areas with underdeveloped financial infrastructure." (Bitcoin Wiki, 2024). When it comes to the discourse of freedom from and lack of trust as a motivator to engage with the BTC ecosystem, enthusiasts occupy the subject position of instigators of a change they are simultaneously promoting and paving the way for through the organization of BTC. Such change is once again reinscribed in a push towards a neoliberal tone of platform capitalism:

> "There is no central bank or government to manage the system or step in if something goes wrong. Some people find this appealing because they think they have more control over their funds but in reality, there are significant risks. With no banks or central authority protecting you, if your funds are stolen, no one is responsible for helping you get your money back." (Bank of England, 2023)

Traditional institutions are thus positioned as control- and surveillance-driven subjects, highlighting the high stakes and the need for controlling a peer-to-peer system that can quickly damage individuals, due to issues of fraud and market instability:

> "…it will be important that users and administrators of distributed ledger technologies can meet their responsibilities to combat money laundering, terrorist financing, and other key law enforcement concerns." (US Federal Reserve, 2016)

While the first ideology of technical sovereignty envisioned a trust-less technology by design, here trust-lessness is part of the political nature of the BTC project: what is to be trusted is not just code, but also the revolutionary aims of BTC. Within the ideology of peer-to-peer neoliberalism, this form of trust does not fully belong to neither human-based trust nor technology-based trust, and yet it attempts to co-exist with both. The parts that it takes from each have a hard time coexisting cohesively: human-based trust, which trusts single individuals to 'know best' and 'do their own research', co-exists with trusting that the technology will allow everyone to participate openly and at will, and be able to make decisions on an equal basis. Yet, both forms of trust overlook the unequal role distribution within the ecosystem (Introna and Pecis, 2019), and understand the 'high-risk, high-returns' mechanisms in cryptocurrencies as an inherent characteristic of the system. Here, human-based trust does not function to protect the community in case of losses or fraudulent activity. Rather, it shifts responsibility onto the single individual, regardless of circumstances. Within this ideology, blockchain shifts from a subject position of being an individual asset (that one owns and can accumulate over time) in the first discourse (BTC as political and exploratory project), to one with strong agency, that can exist in itself outside of power grabs (i.e., as escaping taxations and power dynamics) in the second discourse (freedom from and lack of trust in authority).

5. Discussion and concluding remarks

In responding to our focal question, we employ CDA to show how ideologies, discourses and subject positions produce and maintain trust in complex socio-technical arrangements. This approach allows us to observe how trust emerges and is maintained in the BTC ecosystem,

specifically. By focusing on three events in the BTC timeline we can see 1) how different ideologies and discourses mobilise specific subject positions within the BTC ecosystem; and 2) how the production and maintenance of trust in the BTC ecosystem is contested within each ideology, and the implication such contestation has for actors (subject positions) in the ecosystem. Our analysis builds on Dodd's (2018) argument that BTC might have succeeded as an ideology more than as a form of money, that ideologies are materially embedded (Kling and Iacono, 1988), and that they shape and are shaped by framing strategies of actors who engage with different types of discursive justifications that can change over time to achieve legitimacy (Barrett et al., 2013). To this, we add that there cannot be trust without ideologies that enact and maintain it, and that the discourses shaping such ideologies (discursively and materially) mobilise power-infused subject positions—which are themselves recursively produced and maintained by such ideologies. In short: no trust can exist without an ideology that produce the conditions of possibility for its ongoing production and maintenance—and such ideologies need to be enacted and maintained, which implies power. This power flows from the legitimacy of the ideology which might evaporate quite quickly (as has been the case in BTC crashes).

This conclusion is in stark contrast to the existing literature on technology and trust, as summarised by Schuetz et al (2024). In their meta-analysis they conclude that there are "three broad groups of factors that serve as bases for trust in technology: (1) technological-related perceptions and experiences, which are founded on repeated interactions with a technology over time and create an opportunity for favorable perceptions and experiences to arise; (2) trust transfer factors, which encompass trust in related referents (e.g., trust in the organization providing the technology, institutional safeguards) but also proxies for trust such as brand/reputation, positive communication, and personal dispositions; and (3) calculative reasoning. (p. 12)" This might all be true. However, what this analysis hides is the fact that these

'factors' only function in the way they do because of the ideologies that already sustain them as such. For example, 'calculative reasoning' only functions to produce trust, in as much as it does, because of its prior ideological enactment—through, for example, the widely accepted ideology of the rational and autonomous subject that can evaluate information objectively, and the ideology of calculability (Espeland and Stevens, 1998), that all things that may be relevant can, in principle, be rendered calculable, and much more besides. Indeed, we would suggest that it is possible to do a discourse analysis to reveal the ideologies that are necessary for each of these groups of factors to be able to actually enact trust, as is claimed; and furthermore, how these general ideologies are drawn upon to produce and enact specific ideologies in specific situated context, as in the case for BTC.

Why is this an important conclusion? It is important because ideology functions most effectively by hiding itself—it is often deeply implicit or embedded (or black-boxed) in material and discursive arrangements that operate to sustain it (Žižek, 1994). Does this mean that establishing trust is simply a matter of establishing an ideology to sustain it? It might be but that is rarely the case. What we more often see is a contested space. What we have shown in our analysis above is that one cannot understand the production and maintenance of trust in complex socio-technical assemblages if one does not also consider the often competing ideologies that produce and maintain the conditions of possibilities for its enactment. Establishing an ideology is intimately linked to power necessary to enact and maintain a specific set of discourses and material arrangements—however such power is itself afforded by the prevailing ideologies, making trust precarious and always at risk.

Specifically, our analysis has shown how power struggles within the BTC system culminate in the establishing of different situated and contested ideologies—ideologies that draw on some of the more general ideologies identified in the extant literature. Through our CDA analysis we

revealed two main interconnected and somewhat contradictory ideologies across the three events and explored their emergence and relationalities, as shown in Figure 1 below.

Figure 1: Trust maintenance in complex socio-technical assemblages

BTC's trustworthiness emerges as contested and mostly implicit, and as such in flux and tenuous. We can see this through the discourses and subject positions emerging in the Segwit2x event, but also the 2022 BTC market crash: while trust in the BTC ecosystem is questioned (due to differing approaches to cryptocurrency in Segwit2x, and to the volatility of the currency and its market due to external factors and powerful actors in the market crash), trust in BTC is maintained through discourses of individual responsibility regardless of what are perceived as external vulnerabilities.

The BTC entrance in the CBOE Futures Exchange is shaped by discourses that rely on the technological sovereignty of BTC, thereby conferring legitimacy to it as it entered official trading channels. Here, supporters of the BTC project are positioned as technical domain experts, whilst traditional institutions are discursively constructed as law- and order-focused. Legitimacy is conferred by technical means rather than being driven by democratically mandated processes, with the BTC community simultaneously maintaining that BTC's revolutionary potential lies with its lack of need of middlemen and traditional institutions; this is despite its entrance (institutional in shape and form) in the CBOE Futures Exchange. We see this as a moment in which trust is contested: while BTC's legitimacy in entering the CBOE futures exchange is understood as technical rather than traditionally institutional, the subject positions mobilised by the ideology of technical sovereignty somehow blur the two. BTC enthusiasts, here mobilised as domain experts, view BTC as legitimate by virtue of its technical superiority to traditional currencies; yet it is this technical superiority that confers a traditionally institutional legitimacy and thus allows BTC to enter the futures exchange.

Within the Segwit2x fork event, we noted a significant emergence of the ideology of peer-to-peer neoliberalism. Here, we have discussed how this ideology individualises risks, responsibilities and gains, and promotes a notion of trust in single members of the BTC community to know best for themselves and to 'do their own research'. Within this event, trust of peers in the BTC ecosystem became questioned, leading to a BTC fork. The political project of BTC as not needing any authority and not trusting any source as 'the ultimate truth' comes with an inherent contestation of trust in anyone involved in the BTC ecosystem. As such, lack of trust emerged as an inherent trait of BTC as a 'socio-technical assemblage' (Hayes, 2019), and as a motivation to engage in the BTC's political project in the first instance.

The ideology of technical sovereignty was also found underpinning the BTC market crash, coexisting with a peer-to-peer neoliberal ideology where hidden hierarchies in BTC, as a form of organising (Hayes, 2019), surface. Such ideology promotes an ideal of individual accumulation that undermines collective approaches to cryptocurrencies, and more specifically individualises the responsibility and opportunities of risk-taking.

The 2022 BTC market crash unveiled hidden hierarchies in the broader cryptocurrency trading environment, including BTC. Here, a small number of very powerful actors (by virtue of owning exchanges, or by being highly influential within Big Tech) emerge as having significant influence on the value (perceived and real) of cryptocurrencies. The co-existence of these ideologies presents interesting implications for how subject positions are mobilised: on the one hand, within the ideology of technical sovereignty, BTC enthusiasts' support of the trustworthiness of BTC remained steady, because what makes BTC trustworthy is its technical superiority. On the other hand, the 2022 market crash did not prompt collective approaches to tackle such imbalanced power dynamics: instead, the ideology of peer-to-peer neoliberalism pushes for individuals to navigate the ecosystem, with all its crashes, perks, and instabilities, primarily by themselves. The 'BTC community' is fundamentally a community by numbers rather than relations.

In sum, what our analysis reveals is that trust is often produced and kept in place through an interconnected set of ideologies that may be to some degree contradictory, overlapping, and tenuously connected. Consequently, making trust contested and as such fragile—especially in distributed complex socio-technical assemblages such as Bitcoin. We would suggest that it is not possible to really understand the production of trust unless one understands the co-constitutive relation between ideologies and material discursive arrangements that create the possibilities for their enactment—that is, the relations of power that produce it and is produced by it.

Through our analysis, we contribute to extant research on how trust becomes possible and how it is maintained in complex socio-technical assemblages: namely, through different and co-existing ideologies and discourses that mobilise specific subject positions. The ideologies of technical sovereignty and peer-to-peer neoliberalism sustain trust in socio-technical assemblages as the blending of both personal and institutional trust, but also algorithmic trust, in a complex and contested way. As suggested this is in strong contrast with the extant literature that tends to look for features and relationality to understand the coming into existence of trust. It is not that these studies are invalid. It is rather that they leave out an important background conditionality, that of ideology, implicit. We would also argue that they tend to be too general in their claims. Specifically, that ideology is normally enacted in a very specific and situated manner. To really understand the enactment of trust (or not), we need to also see how these more generalised ideologies become drawn upon to be enacted through specific situated material and discursive practices (Barrett et al., 2013). I might generally trust the doctor—due to the ideologies of expertise and science—but I continue to trust her through the way these become enacted through situated material and discursive practices, here and now. Thus, ideology does not guarantee or secure trust, it merely creates the conditions for its possibility. It still needs to be enacted, through material discursive practices—yet continually hides itself to be productive.

Overall, our analysis of Bitcoin as an instantiation of blockchain technology shows that algorithm-driven technologies do not simply instantiate human trust (because of their apparent neutrality and security), nor are they a replacement for traditional mechanisms of governance, control, and interaction as Swan and Brunswicker suggest (2018). Rather, they seem to produce the conditions in which the ideologies of trust become hidden within a black-boxed (or at best an opaque) ecosystem—where they operate implicitly to maintain and legitimize certain relations of power at the expense of others. Trust, one might say, always has its politics. And,

we would suggest, it is important to make this politics explicit. This is what we attempted to achieve here.

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