In the Name of the System

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DEPENDING ON WHAT ONE SELECTS TO READ FROM THE SUBSTANTIAL, IDIOSYNCRATIC archive of commentary that has developed alongside the technology, blockchain has the potential to *inter alia* remove the need for third-party mediation or 'middlemen' in commercial, monetary and legal transactions, render obsolete the need for trust in social and political institutions and by implication the democratic state itself, reconfigure the way we understand and exchange value, decentralise and hence democratise power, dramatically change how we conduct our personal and online identities, and, ultimately, install a failsafe, automated system of algorithmic governance in nearly every sphere of daily life. According to entrepreneur and co-founder of the decentralised computing platform, Ethereum, Joseph Lubin, 'everything—really everything—we do on the Internet or via any kind of digital channel is about to undergo a radical change' (quoted in Peck). For better or worse, blockchain, it is generally agreed, will completely reorganise capitalism as we know it.

Instead of an antiquated politics built upon messy negotiation and revision, democratic debate and discussion, competing truths and histories, subjective preferences and distortions, the distributed public access ledger at the heart of blockchain—the ledger that is famously irrefutable and unalterable—establishes a definitive record of events, and of ownership, truth and history. For Nigel Dodd, this signals an 'epistemological utopianism' that goes far beyond money. As Dodd

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explains, 'The blockchain, its supporters claim, stops us from *lying about history*… There is a strong realist tenor within this discourse' (Dodd 48-49). Donald MacKenzie understands the technology in similar terms, suggesting that it produces 'a single version of history' (MacKenzie). As the zenith of algorithmic control, the blockchain seems perfectly suited to a post-truth world of ambiguity and obfuscation if not outright historical fabrication. In these terms, the blockchain counters both the unreliability of institutional memory and the untrustworthiness of institutional power, providing a means to cut through political manipulation and falsification (as well as, incidentally, monetary inflation), and deliver transparency and verifiability. In a political climate where falsehoods have become their own form of unapologetic post-truth newspeak, where 'news' is filtered and censorship routine, this vision of certainty seems driven more by simple necessity than by an idealistic though fundamentally misplaced utopianism.

Blockchain certainly enables a new form of trust: trust in the system, or, more specifically, trust in the code (Maurer, Nelms and Swartz). Ironically, however, exhorting the public to place their trust in a system that promises technocratic infallibility only leads to less rather than more public accountability—and in an arena that has been deliberately placed well outside processes of democratic deliberation and redress. In this respect, it is worth looking more closely at the recent history of the Bitcoin protocol and its promise to create a new decentralised monetary instrument and alternative financial infrastructure. And at a time of 'self-learning' algorithms and machines, artificial intelligence and distributed computing platforms, it may also be useful to consider what is a ledger-based 'system', how does it organise or produce historical certainty, and where or what are its social and technical limits?

A Brief Detour via Bitcoin

Blockchain technology first attracted attention as the distributed public access ledger underlying Bitcoin, the peer-to-peer network of digital money developed by Satoshi Nakamoto, the pseudonym used by the individual or even group of developers that posted the initial proposal for Bitcoin. In the 2008 white paper Bitcoin is described as a 'purely peer to peer version of electronic cash [that] would allow online payments to be sent from one party to another without going through a financial institution' (Nakamoto). The ability to transact on a peer-to-peer basis without the need for 'middlemen' to verify or authenticate the transactions was compelling for the libertarian-aligned Bitcoin community. Rather than 'trust' in an institution backstopped by the state (or the IMF or World Bank), here trust is transferred to the technology itself, and, specifically, the public ledger system that records all the transactions within the system and prevents counterfeiting, fraud and 'double-spending'. This is trust created by a

mathematically generated algorithm and the technical system in which it resides. In a post-Bretton Woods world in which there is no longer any gold anchor in which to trust, and in which the ideological interests calling forth our faith in money are rarely disguised (In God we Trust) but whose authority we see regularly delegitimised, it was not surprising to see a desire for a new kind of trust in 'trustless' technology. As one cryptocurrency user aptly put it: 'So should I trust a centralised agency that's betrayed me over and over and over… Or do I go with a simple stable maths based crypto that doesn't change issuance levels on a whim?'

Even before the appearance of Bitcoin in 2008, a common project for anti-state libertarians had been the development of *digital cash*, a form of electronic money that could circulate without the need for a central bank, a clearing house or a centralised authority, which could be transacted pseudo-anonymously (Brunton 2019). Foremost on the libertarian agenda was the need to divest banks of their monopoly on the creation of money, or at the very least create alternative non-bank means of payment. More than ten years after Bitcoin emerged, new cryptocurrencies are emerging almost daily, most of which use blockchain technology.

With bitcoin production capped at 21 million, scarcity was hardwired into the technical design of the overall system and is designed to function explicitly as an anti-inflationary mechanism, a further illustration of the libertarian values regarding monetary policy that underpin the currency's origins and logic. Yet rather than stability of value, the most remarkable feature of Bitcoin has been wild volatility, a feature that is common to other cryptocurrencies and which further influences their appeal as vehicles for speculation. And although the ledger technology underlying Bitcoin is proclaimed to be immune to external manipulation—unlike so-called fiat money—Frances Ferguson (155) has argued that the cryptocurrency has actually demonstrated that it is wholly subject to 'the semantics of human suggestion and command', influenced by the hype, stories and narratives that are now inseparable from the system itself and which, just like the 'animal spirits' John Maynard Keynes observed decades ago, create bursts of panic buying, selling and market turbulence.

Smart Contracts and Consensus Algorithms

Beyond Bitcoin, non-monetary applications of blockchain have proved to be just as compelling and look likely to be altogether more successful. These applications include using blockchain for organising new kinds of commons-based peer production and community collectives, for recording the provenance of artworks, for electronic voting, digital asset management, smart contracts, and property, real estate and land title management, for establishing property sharing and access schemes, and as the basis for decentralised infrastructures of energy

production. Indeed, interest in the blockchain ledger now spans banks and financial institutions, insurance companies, governments, large corporations and even the military. For the decentralised computing platform, Ethereum, blockchain technology is ultimately the basis for the creation of a 'liquid democracy', a radically new social and economic order without the need for centralised authorities or their systems. One of Ethereum's favourite examples of a blockchain-based smart contract is a marriage contract that is automated and self-executing, requiring no legal intermediaries such as notaries to validate it because it is verified by time-stamped cryptographic code. Other smart contracts function in a similar way, creating more direct peer-to-peer transactional exchanges that make third party intermediaries such as notaries and lawyers increasingly redundant. The blockchain, in these applications, appears to epitomise direct democracy; in fact, the CEO of Bitcoin Indonesia has gone so far as to claim, 'In its purest form, blockchain *is* democracy'.

Bringing the efficiency of cutting-edge blockchain technology to bear on a marriage contract seems odd on so many levels, not the least of which is the denial of rituals of performativity which have been so central to the institution of marriage, especially, as Austin (1976) demonstrated, to the vows of marriage itself: 'with this ring I thee wed'. This seems to relate to a more general denial of performativity in the operations of blockchain generally. Perhaps more than the desire for epistemological clarity or certainty, or for a singular perfect history, then, the blockchain vision really wants to install a 'data positivism' that seeks to deny the performativity of technical models, the inherent feedback loops of systems as well as the radical relationality and contextuality of meaning, including what is conveyed by the apparent neutrality of 'information'.

Moreover, the common-sense appeal of radical democratisation surrounding blockchain demands both caution and critical reflection. The peer-to-peer trading platform, Power Ledger, formed and registered in Western Australia in 2016, proposes to use blockchain technology to enable households to trade the surplus energy derived from their photovoltaic panels in a decentralised context that is relatively autonomous from the transmission grid. The Power Ledger project has been celebrated for its 'democratisation of power', and for establishing a local peer-to-peer trading system that bypasses the monopoly power of the major energy companies. However, while Power Ledger claims it avoids the involvement of intermediaries, the architect of the scheme is rewarded for maintaining the system by charging a commission on all transactions. It is proposed that such transactions would be settled in the form of the cryptocurrency Ether, established by the computing platform Ethereum discussed above. In other words, one intermediary has simply been substituted for another.

The promise of individual household empowerment is also compromised by the fact that the most effective means of managing peer-to-peer trading given the volume of information required to produce optimal outcomes is to focus the system's governance on algorithm-based calculations rather than the decision-making processes of households. The much-touted advantages of decentralisation and decentralised models conveniently overlooks the key point that the algorithm calculations, indeed the blockchain system in which the calculations are constantly made, is system-based; it is not decentralised at all. Through the system itself household agency and empowerment is actually rendered subservient to the calculative power of the blockchain technology (Rosewarne).

The related notion of privacy and security being better protected by decentralised networks is similarly fallacious; indeed, the opposite is frequently the case. Decentralisation in a technical system is no guarantee of increased privacy or autonomy nor does it necessarily result in the decentralisation of power in ways that are expected. The cryptoanarchists so fearful of the heavy hand of the state and its incursions on their inviolable right to privacy, helped develop the FinTech infrastructure that made the blockchain thinkable and a concrete reality. But they also inadvertently paved the way for the very surveillance practices and technologies that make these breaches potentially more invasive, more widespread and more profitable. In the wake of Cambridge Analytica, in which the personal data of 50 million citizens worldwide was harvested and then sold to those in the Trump election campaign who wanted to influence specific voters in specific key states, social media platforms can no longer be seen as communications systems which simply connect people together. It is now clear that Facebook and other similar platforms have skin in the game; oriented around business models premised explicitly on harvesting and monetising the data of their 'prosumers', turning their profiles, preferences and payment data into commodities to be onsold. And blockchain will undoubtedly be a crucial component in the future business ventures of these platforms, facilitating the development of cryptocurrencies, payments systems, digital ownership infrastructures or even, ironically, as a technology adopted to protect the personal privacy of the platforms users from the kind of breaches that occurred so spectacularly in the Facebook/Cambridge Analytica episode (Hall).

In many non-monetary applications of blockchain, it has been suggested that rather than a complex calculative system the ledger functions primarily as a database, as a form of record-keeping, albeit one that is unalterable, tamper-proof and fully verifiable. Yet even in these applications, there is still the assumption that the technical system is somehow neutral, merely a repository for gathering and storing information. But even the most complex technical systems are always entirely social in nature. The information they amass, store and process is never just already 'there'; rather it is always already the result of human selection and

decision-making, the product of irresolutely social and political choices and categorisation, and even more so once it becomes one of many elements and inputs within a complex system. Yet time and again, the overwhelming assumption of the blockchain protocol is that the difficult complications of human sociality, of hierarchy, privilege, wealth and power, can effectively be made to disappear, replaced by the technological fix of consensus algorithms.

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