

# Liberating ideas of a new ecosystem

## The Blockchain's potential in social perspective

Nina van der Giessen

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### Abstract

*This paper sheds light on the Blockchain's potential as a new ecosystem. It discusses in what form Blockchain technology will disrupt society. In order to do so, it emphasises a historical comparison between promises of the Blockchain and the Internet. Social implications of the Blockchain's technicality, commodity and the means of authority are used to demonstrate its future impact on capitalist society. This paper shows that the technicalities of the Blockchain fall outside the scope of liberating industries and instead will be used as profitable capitalist instruments.*

### Keywords

Blockchain, ecosystem, technological potentials, market democratization

### 1. Introduction

“Where the old world was hierarchical, reluctant to change and controlled by powerful intermediaries, the new order will be flatter, offering a peer-to-peer solution; more private and secure; transparent, inclusive and innovate” (Tapscott & Tapscott, 2016, p. 86). Some consider it a speculative bubble (Garcia, Tessone, Mavrodiev, & Perony, 2014; Pichet, 2017), as cited in (Demary & Demary, 2017; Mattila, 2016; Mettler, 2016; Trautman, 2016) others proclaim it a “disruptive technology”, that will reconfigure different aspects of society and its operations. “Blockchain is an open, global infrastructure that allows companies and individuals making transactions to cut out the middle-man, reducing the cost of transactions and the time lapse of

working through third parties” (Underwood, 2016, p. 15). Just as the Internet held promises in opening up societies (Morozov, 2011), information freedom (Castells, 2002, 2010) and undermining government power (Goldsmith & Wu, 2006), Blockchain technology could be liberating financial services (Underwood, 2016), fostering democratic/participatory decision-making (Wright & De Filippi, 2015) and transforming capital markets (Broby & Paul, 2017). Following up mainframes, PCs, the Internet, and mobile/social networking in becoming [...] the fifth disruptive computing paradigm (Sadouskaya, 2017; Swan, 2015a) the Blockchain could be “a blueprint for a new economy” (Swan, 2015a).

Reasons for celebrating the Blockchain’s potential in such fashion are not only given for its ability in solving problems of authenticity without inclusion of any trusted intermediaries. Also, its endless possibilities within information technology are praised. Currently the Blockchain is gaining popularity as “an alternative transaction system” (Glaser, Zimmermann, Haferkorn, Weber, & Siering, 2014) in which cryptocurrencies replace actual money. Applauded as one of the most promising technologies for the next generation of Internet interaction systems, the Blockchain, as cited in (Xie, Dai, Chen, & Wang, 2016) will might play a role in smart contracts (Kosba, Miller, Shi, Wen, & Papamanthou, 2016), public services (Akins, Chapman, & Gordon, 2014), Internet of Things (IoT) (Zhang & Wen, 2015), reputation systems (Sharples & Domingue, 2016) and security services (Noyes, 2016). In the near future, Blockchain’s security mechanisms based on public ledger and distributed consensus could serve a wide span of industries including finance, healthcare, government and consumer electronics (Crosby, 2016; Xie et al., 2016).

This paper attempts to review Blockchain technology potential with the means of former technical and social developments and discusses how it changes capitalist society. As many aspects of the Blockchain are discussed in approaches of different fields, this analysis limits its framework by focussing on the social implications of its technicality, commodity and the means of authority.

## **2. Future applications of the Blockchain**

Starting within banking, the Blockchain could become the technological underlay for payments, decentralized exchange, token earning and spending, digital asset invocation and transfer, and smart contract issuance and execution (Swan, 2015a). Mitigating de-risking by financial institutions (M. Niforos, 2017), by replacing the fraudulent sensitive third-party system as we know it with decentralized control mechanisms instead of human intervention.

Shared economy applications, companies like Uber and Airbnb could soon benefit from Blockchain built peer-to-peer automatic payment mechanisms, foreign exchange platforms and digital rights management (Huckle, Bhattacharya, White, & Beloff, 2016, p. 461). Eventually their services would be replaced by the “trustless” system of the Blockchain itself. Distributed applications (Dapps) would users to share everyday objects without the need for a Trusted Third Party (Bogner, Chanson, & Meeuw, 2016, p. 177).

The Internet of Things (IoT) current situation is that devices are controlled by users from a central point. Meaning that systems are not automated in many ways. The Blockchain could be the framework facilitating transactions, coordination and tracking between billions of IoT connected devices (Karafiloski & Mishev, 2017, p. 766). When it comes to health, Blockchain could serve as a framework for creating “secure owned-health data commons”. Allowing “smart contracts” to automate and track certain state transitions, while data orchestration and patient privacy are considered (Azaria, Ekblaw, Vieira, & Lippman, 2016; Swan, 2015b).

On the longer term, Blockchain technology could evolve in “Blockchain thinking”, promoting an ecological framework in which machine intelligence and human enhancement will be combined. “Blockchain thinking might be used to investigate human ingenuity” (Swan, 2015b). Eventually it would be an advocacy tool, correcting human beings of wrongdoings. Holding us up a mirror, something other technologies not have not been able to do before.

The Blockchain still is in an early age of development. As highlighted by Mattila (2016), technical superiority alone does not suffice. Therefore, to utilize its potentials, “the adequate presence of three factors: demand, competition, and know-how is required in the Blockchain ecosystem” (Mattila, 2016, p. 10). This means that “companies and regulators in emerging markets will need to strike a balance between allowing enough space for the innovation ecosystem to flourish, while also effectively managing the associated risks and costs” (M. Niforos, 2017, p. 7). Nonetheless, the question rises in what form Blockchain technology will fulfil its promises of liberating economies and disrupting societies.

### **3. Technical innovations, the promise of the ledger**

Blockchain’s three core values are outlined in the book “Blockchain Revolution” (Tapscott & Tapscott, 2016) and they distinguish the technology from any other system build. It is distributed, as there is no central data base to hack. It is public: anyone can view it as all transactions

are open. Lastly, it is encrypted. A two-key system maintains virtual security. Within the Blockchain, Bitcoin serve as the commodity. Only a limited amount of Bitcoin circulates within the Blockchain. One single commodity within a global network allows “fast, cheap and secured cross-border payment [...] differently from Payment as Service solutions like Paypal, these methods only have back-ends relying only on decentralized consensus protocols” (Tasca, 2016, p. 69). Blockchain technology opens up new ways of collaboration. It is built around a peer-to-peer network of distributed ledgers, in which individual minors collaborate to keep the system working. Bruns (2008) describes the process of peer-to-peer collaboration as “radically decentralized, collaborative, and non-proprietary; based on sharing resources and outputs among widely distributed, loosely connected individuals who cooperate with each other without relying on either market signals or managerial commands” (Bruns, 2008, p. 17). Decentralized minors are the core of the network. For the transmission of the transaction, unique pieces of codes are exchanged. The Blockchain constantly synchronizes the constant ledger. Every actor has a complete and identical copy. Without the crowd collectively clearing each transaction, the Blockchain cannot function. Sundararajan (2016) emphasizes the importance of making the process of clearing transactions challenging to avoid a potential takeover of the Blockchain (Sundararajan, 2016, p. 90). To get minors interested in participating in the network, Bitcoins are offered in exchange. “The underlying technology is based on [...] a reward mechanism in terms of Bitcoins as an incentive for users to run the transaction network” (Ferrer, 2016, p.2). Within the Blockchain, there is “the need for an incentive (some equivalent of money, typically called the "coin" that is generated from within the system) to get the crowd interested in performing the challenging work that accompanies verifying transactions” (Sundararajan, 2016, p. 91). Besides a reward mechanism to ensure network performance, the Blockchain also enables a reputation system in which members can rate one another’s performance as collaborators. Joe Lubin, founder of Blockchain software ConsenSys, describes its function in Tapscott and Tapscott (2016): “Persistent digital identity or persona and reputation systems will keep us more honest and well behaved toward one another” (Tapscott & Tapscott, 2016, p. 90).

Particularly important is that trust derives from the network and from objects on the network. Within the system, connections do not rely on transparent agreements, but encrypted codes. According to Zimmer (2017), the system requires “users to neither trust nor depend on someone’s goodwill could be transformative for those of us with access to mature financial systems and for the billions of people not being served by today’s transactional systems” (Zimmer, 2017, p. 312). Similarly, Tapscott and Tapscott (2016) define this as a decentralized system without central authority that “ensures integrity of the data exchanged among billions of devices with-

out going through a trusted third party” (Tapscott & Tapscott, 2016, p. 5). Blockchain technology is built on open source code, “which means anyone can download it for free, run it, and use it to develop new tools for managing transactions online” (Tapscott & Tapscott, 2016, p. 7). This gives possibilities for many unrealized capabilities, which not only benefits the network itself, but also the users. Lessig (2004) describes its potential: “open code fosters a kind of transparency in networked behaviour” (Lessig, 2004, p. 153). Tapscott and Williams (2008) consider the future applications of such an idea: “embracing open source means embracing new mental models and new ways of conceptualizing value creation” (Tapscott & Williams, 2008, p. 61).

#### **4. Asymmetrical power and the means of automatization**

While Blockchain technology may free individuals from dependence on financial industries, it will not demolish asymmetrical power relations. Mansell (2017) argues that the current digital technological innovation pathway yields an intelligent decision-making apparatus in which automated decisions are increasingly unaccountable (Mansell, 2017, p. 4293). In the system of the Blockchain, it is not financial industries that regulate the transactions; but automatized codes. Zuboff (2015) proclaims this as “surveillance capitalism”, in which communication technologies function as authorities. “Asymmetrical power still presents risks to citizens as result of a new kind of automaticity” (Zuboff, 2015, p.82). Within Blockchain technology the notion of control is automatized. In other words, the Blockchain is not decentralizing authority, it is restructuring the digital financial realm. The shift from physical to digital control causes the need for unfounded trust in technology. This fosters a gap between personal autonomy and authority. According to Van Dijk (2012) consequences are harder to force and the places where decisions are made become even greater (Van Dijk, 2012, p. 137). For instance, most people do not know how the Blockchain works, they only use it. Popper (2015) adds that not every user is interested in having total control over their own money. Man’s trust in the code underlying the Blockchain does not equals man’s ability to deal with the code in the right way. Similarly when it comes to more traditional ways of securing money, it is not unaccountable that outside experts are often brought in (Popper, 2015, p. 144). People entrust financial institutions because they do not have the expertise or time to make sure the institution is doing their job. For Blockchain technology it takes time to replace this trust, as the general opinion is still sceptical of the viability of the Blockchain as a financial instrument.

## 5. New forms of capital, limits for market democratization

The Blockchain promises financial dissemination. Zimmer (2017) questions if this power relies within the potential of the technical invention itself. While disintermediation and decentralization are certainly part of cryptocurrency's conceptual constellation, they do not provide an exhaustive description of Bitcoin's geopolitical architecture" (Zimmer, 2017, p. 232). Blockchain technology opens up vital market possibilities for joint ventures, start-ups, day traders, minors and software developers and many other parties. Sundarajan (2015) emphasizes the need for third parties in the network. In the absence of any central, third party owning the network, man cannot make sure that different peers have the right incentives to contribute (Sundararajan, 2016, p. 94). Tapscott and Tapscott (2016) argue that the Blockchain not only enables new forms of economic organization, it also creates new portfolios of value (Tapscott & Tapscott, 2016, p. 91). Nonetheless, some scholars are critical of this development. Zimmer (2017) describes the Blockchain as a technological innovation that leads to increased concentration and—irrespective of its articulated ethos—growing centralization (Zimmer, 2017, p. 91). Gloerich et al. (2018) indicate the restrictive effects on its future potential: "while Blockchain technology offers some interesting visions on future scenario's, most of the potential has been swallowed up by business logistics" (Gloerich et al., 2018, p. 9). For example, cryptocurrency exchange platforms circulating in the Blockchain, offer privatized commodities for registered account holders. The bits of Blockchain they offer are layered by closed code. "These platforms share the underlying Blockchain technology and reward mechanism, but function as isolated transaction networks" (El Bahrawy et al., 2017, p. 2). Lessig (2004) argues that when "code becomes a vital commodity; it fosters a rule-bound and lucrative market for code-based services and products. Closed code is designed, above all, for proprietorial purposes and, while being far more opaque, plays a central role in a market-driven Internet space" (Lessig, 2004, p. 106). Tapscott and Tapscott (2016) describe the limits for market democratization: "the impact on corporate architecture stayed intact as the recognizable foundation of capitalism" (Tapscott & Tapscott, 2016, p. 93).

## 6. Utopian promises, complexity of the ecosystem

The Blockchain is showing to become something that will become a complex and extremely asymmetric network of players. Similar to McChesney's (2013) perspective on the Internet: "what seemed to be an increasingly open public sphere, removed from the world of commodity exchange, seems to be morphing into a private sphere of increasingly closed, proprietary, even

monopolistic markets” (McChesney, 2013, p. 97). It is not unexpected that the Blockchain and in particular the cryptocurrency market soon will be modified in segmented spheres, where commercial parties dominate parts of the system. It is only the question if the technology behind Blockchain can change unethical decision-making processes. Walker (2017) does not expect this to happen: “Everything that was bad about capital markets [...] has been replicated in the bitcoin/cryptocurrency world. Fraud, market manipulation, regulatory arbitrage, insider trading, unreliable infrastructure, blatant support of criminal activity and Ponzi schemes are rife” (Walker, 2017, p. 2). Rather than a technology being a democratically distributed system, it is exploited by fewer entities that use it to acquire more power. The liberating technology that would disseminate financial markets turns out to be a profitable capitalist instrument. Just as the Internet hypothetically led to a democratization of information and its wide dissemination to ensure equal access, the Blockchain proves itself to be a system, in which individuals fulfil their own needs. “It has a clear logic of its own, inimical to much of the democratic potential of digital communication” (McChesney, 2013, p. 97). In line with the developments of the Internet, “far from digital networks leading to a dissolution of monopolistic behaviour, we are looking at some highly concentrated market sectors” (Curran, Fenton, & Freedman, 2016, p. 89). Bolaño (2015) explains this trend by arguing that the hidden function of today’s communication system is not aiming towards advancing democracy, but towards the constitution of a world in which power is increasingly concentrated (Bolaño, 2015, p. 188). Similarly, Morozov (2011) adds that all technical innovations once seen as media with a democratic potential that would end wars and dictatorship and usher in an era of freedom (Morozov, 2011, p. 122). This is why utopian promises are a given for the creation of new networks and “each networked communication system becomes owned and operated by the elite” (Fish, 2017, p. 78). McChesney (2013) continues: “for all of the digital revolution’s accomplishments, it has failed to deliver on much of the promise that was once seen as inherent in the technology” (McChesney, 2013, p. 96). Wu (2010) explains this as an inevitable process, in which all information technologies rise as free, independent creations, ending as controlled mediums of closed systems. This repeatable process or recycling, “would hardly have seemed so at the dawn of any of the past century’s transformative technologies, whether telephony, radio, television, or film” (Wu, 2010, p. 11).

## **7. Liberating features, the role of anonymity**

The question rises how the technical development of the Blockchain once again created the idea of liberating systems of control. Similar to other economical markets, scarcity of a commodity equals uneven demand. Like the democratic potential of the Internet, much focus is

placed on potentials of the technology behind the system, instead of discussing “the actual usage and the social and political context of the use” (Morozov, 2011, p. 110). Blockchain technology itself cannot be liberating, as the meaning making processes are created by its network and by its social and political context. Networks are not inherently liberatory and network openness does not lead us directly to democracy. When a network has liberating features, it does not mean it is used in the right way. The connotation is created by the people using the technology. Particularly important for the Blockchain is the trust relationship within the system, which relies on individual behaviour instead of community ties. “Rather it comes from taking refuge in a defensive individualism mediated via mathematical contractual law” (Zimmer, 2017, p. 312). This explains why “the practices of new media may be liberating for the user but not necessarily democratising for society” (Curran et al., 2016, p. 142). According to Jenkins (2006) not all individuals have access to the skills and resources needed to be full participants. Meaning, Blockchain technology itself does not create equal access to the network. It cannot lift information inequality. People without connection to the Internet nor the Blockchain, remain silenced. The digital divide, used to distinguish the growing gap between those with and without access to digital connection technologies, is not lifted by the emergence of the Blockchain. Therefore, the liberating potential is limited to actors already connected to its network, or those who participate in the online economy. Furthermore, the argument that Blockchain technology will eliminate misuse of power can be questioned. The ledger records transactions, but the addresses, a series of numbers does not include the names of people involved in the transaction. This gives possibilities for trading outside the gaze of authorities. On one hand, this frees the individuals from privacy restraints, on the other hand, it opens up many possibilities for criminal businesses (Brown, 2016; Walton & Dhillon, 2017). Considerably, “Blockchain technology can become a tool for powerful institutions to enrich their wealth, or if hacked by the government, a platform for some kind of new society” (Tapscott & Tapscott, 2016, p. 25). In this way, it opens up new ways to accumulate money in the anonymous online global economy. Problematically, as buying illegal or unsavoury goods can be an incentive to participate in the Blockchain (Popper, 2015, p. 71). The network enables criminal practices, as verifications and users are anonymized. “Criticism of the cryptocurrencies in the media and more broadly on the Internet has been growing for some time, with their association with organised crime, ransomware and money laundering” (Walker, 2017, p. 1).

Because of its ability to anonymize information, there will be institutions trying to regulate it. “National governments continue to play key roles in shaping, populating and enforcing the various agencies and mechanisms involved in the regulation of online networks” (Curran et al., 2016, p. 106). According to Mansell (2012) the consequences of regulating digital technologies

could lead to further serious security and privacy related issues (Mansell, 2012, p. 18) . Morozov (2011) adds: “in virtually all authoritarian states, governments maintain control over communication networks and can turn them off at the first sign of protests” (Morozov, 2011, pp. 53–54). The need for regulations increases when networks expand. “As technologies such as the Web [...] and computer-supported collaborative tools are applied, the need for such rules increases in order to manage problems of information congestion and filtering” (Mansell, 2012, p. 53). According to ElBahrawy (2017) in the immediate and mid-term future, legislative, technical and social advancement will most probably impact the cryptocurrency market seriously (ElBahrawy et al., 2017, p. 7). This does not stop Blockchain technology from existing, although it will impact its future influence.

## 8. Conclusion

It might be too early to decide whether Blockchain technology can be liberating. Zimmer (2017) suggests understanding it as one of digital primitive accumulation, in addition to whatever liberating claims it might promise (Zimmer, 2017, p. 326). As Blockchain technology matures, natural monopolies will rise and authorities will try to control it. Legal, regulatory and political obstacles will influence how the technology will shape the future landscape. An important difference with the promises of the Internet, is the role of information. Within the Blockchain, information is not stored. This brings hope for individual data autonomy. Blockchain technologies offer possibilities for equal networks, however, the question rises who takes responsibility for wrongdoings, as the system is built to secure anonymity over safety.

While the Blockchain may enable changing actual commodities for the means of information, the key constraints addressing the challenges of liberating the financial economies fall outside the scope of its technological potential. Thus, it should not be overlooked that technical innovations come easier than social changes. The Blockchain cannot secure access to the Internet. It is not the technology itself that decides its democratic potential, rather the social and political context of use will decide whether it will have a democratic impact. The inequality of information should first be lifted before the Blockchain’s democratic potentials can be considered.

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## Biography of the author



Nina van der Giessen is a Dual Master's Degree student in Digital Communication Leadership at the University Salzburg and the Vrije Universiteit Brussels. In 2015 she obtained her Bachelors' degree in Media and Culture studies at the University of Amsterdam. She is interested in social developments of Blockchain technologies. Currently she is working on her master thesis in which she places the mind-sets of cryptocurrency investors in the context of our time, a distributed capitalist society.

Kontakt: [ninavdgiessen@gmail.com](mailto:ninavdgiessen@gmail.com)