

# Blockchain 2.0 and Beyond: Adhocracies

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**Abstract** This concluding chapter offers a book synopsis. Parsing the chapters which follow the evolution of decentralized platforms from initial attempts at peer to peer lending and crowdfunding to new market dynamics enabled by blockchain rooted, smart contract fueled P2P platforms—we reveal the ultimate quest in deploying this social technology for building new economies.

**Keywords** Synopsis · P2P platforms evolution · Social technology · New economy · Self-organizing communities · Adhocracies · Catallaxies

Current institutional structures are drastically challenged by the rate of change of society, technology and the environment which far outstrips their capacity to adapt. Governments and international organizations are losing their legitimacy to competition from entirely new structures of collective action emerging from adhocracies, aka self-organising Information Communication Technologies (ICT)-enabled groups and communities (Ulieru 2014). We consider four key factors fuelling institutional change under the above mentioned disruptions. Firstly, that individuals, ICT-enabled devices and conventional institutions are now deeply entangled. Secondly, that is it possible to equip those devices with social intelligence to be equal participants in society (Brynjolfsson and McAfee 2014). Thirdly, that out of the entanglement and the intelligence, new dynamical structures emerge which are more responsive, have greater agility and are less prone to path dependency and this socio-technical entanglement can lead to the emergence of high quality constructive social processes (Ulieru and Doursat 2011). And finally, that people still retain the power to self-organise these structures and self-regulate their behaviour in the context of these structures according to agreed rules (Chase 2015).

The book features pioneering attempts at deploying new economic models which move the field from describing monetary flows to understanding complex social processes that underlie the dynamics of the economy. It begins by describing

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the socio-economic nature and legal challenges brought about by the emergence and proliferation of P2P platforms. On this basis various alternatives to the centralized approaches that rule the current financial sector—which lost its legitimacy in 2008 by not keeping its promises to its customers—are exposed.

Pelizzon, Rieder and Tasca in the Chapter “Classification of Crowdfunding and P2P Lending in the Financial System” give an overview of the first P2P platforms that enabled new market structures to emerge, such as Crowdfunding. If the emergence of P2P platforms may somehow be related to banks being under stress as claimed by Blaseng and Koetter in the Chapter “Crowdfunding and Bank Stress”, FinTech has continued to provide cost effective platforms as an alternative to traditional banking. In “How Peer to Peer Lending and Crowdfunding drive the FinTech Revolution in the UK” Chisti explains the role of P2P lending and P2P equity markets as the drivers of the alternative finance revolution which in the UK is experiencing some of the highest growth rates in the world. Apart from the UK, P2P technology-enabled platforms are speedily replacing the traditional banking services also in Asia. In particular, Barberis and Arner in the Chapter “From Shadow Banking to P2P Lending” emphasize the regulatory challenges of P2P lending in China: the country with the largest proliferation of P2P lending platforms in the world. The authors argue that, due to the recently increased attention received by the shadow banking sector and the better transparency allowed by its technological readiness, the Chinese government now has a prime window of opportunity to regulate non-bank finance in China without impeding economic growth, nor risking a financial security meltdown. China would effectively transform its last-mover advantage in the field of financial reform into a first-mover advantage. Finally, the authors present their view of data-supported regulation, or “RegTech”.

The book continues by offering a very exciting and inquisitive incursion into the new market dynamics brought about by the principles of decentralization and sharing enabled by (blockchain based) P2P platforms. Although, Courtois in the Chapter “Features or Bugs: The Seven Sins of Current Bitcoin” warns against a number of pitfalls in the current implementation of the first and largest blockchain application so far (i.e., Bitcoin), in the Chapter “Decentralized Banking: A Return to Technocracy In the Digital Age”, Hayes makes the point that digital currencies could more securely and cheaply connect the world. The invention of the Blockchain is opening up the possibility of a different kind of monetary order run by inviolate mathematics, not a person or committee. Further, Gavin in the Chapter “Trustless computing—the what not the how” details how these FinTech innovations provide more functionality than nation state monies, at a lower cost, with safety and security achieved without armed guards and vaults and guaranteeing stability through attractive finite issue limits, again dictated by math rather than being subject to pressures to inflate to escape difficult political choices.

The Chapters authored by Porter and Rouse (“Reinventing Money and Lending for the Digital Age”) on crypto currencies and Biggs (“The Opportunity for Non-Banks in Financial Inclusion and Remittance”) on mobile money present a number of narratives about why those FinTech innovations may be empowering for people, especially in historically poor and financially underserved communities, as well as in less developed countries:

- as a means to facilitate low-cost remittances for those seeking to transfer small amounts of money internationally
- as a means for an otherwise excluded individual to have a decentralized global bank account, accessible simply by downloading an open source wallet from the internet, rather than having to set up with a formal financial institution
- subsequently providing the basis for a richer set of financial services, cooperative structures and even micro-insurance systems (Scott 2016).

The Blockchain ledger is not simply for accounting monetary transactions. At its core, it is a platform that allows people to come to agreement on virtually anything without intermediaries. It provides a foundation to make social contracts based on the principle of consensus. Its universality enables it to be an asset registry, inventory, tracking, and exchange infrastructure, a universal registry, listing, and management system for any of the world's assets, smart property, and itemizable quanta. It is an infrastructure which provides society's public records repository, a representative and participatory legal and governance system. Thus the Blockchain is poised to become a social technology for whole new institutional forms of economies sporting new market dynamics. Brought about by the principles of decentralization and sharing enabled by (blockchain based) P2P platforms, a deeper societal transformation is catalyzed, resulting in the basis of economic life being mutual cooperation and solidarity, rather than individual competition for narrow economic success. The idea is that in removing the need to trust central authorities (as Gavin clarifies in the Chapter on Trustless Computing), blockchains could be platforms upon which one can build new forms of non-hierarchal cooperation between strangers.

While formal market systems may be a source of economic growth and individual enhancement, they are simultaneously the source of social inequality, individual alienation and community disintegration. In essence, the cryptographic apolitical purity of a blockchain system appears not just as a way to stop abusive people who control central institutions, but as a way to once-and-for-all resolve the problem of how to establish contractual relationships between untrustworthy human beings who seek out their self-interest (Scott 2016). Aste, Caccioli and Livan ("Scalability and Egalitarianism in peer-to-peer networks") further prove using network theory that there is a trade-off egalitarianism vs efficiency for Blockchain based communities. Further, Barberis and Arner (From Shadow Banking to P2P Lending) and Chishti (How Peer to Peer Lending and Crowdfunding drive the FinTech Revolution in the UK) show how in deploying such decentralized platforms cryptocurrency is interesting because it has features that potentially allow for non-hierarchal self-organization and peer-to-peer collaboration within a communitarian network structure.

With advances in Blockchain technology now removed from the constraints of Bitcoin, it is possible to encode smart contracts as algorithms that will act as a trusted enforcer of agreements. Sclavonius et al. ("Are Transaction Costs Drivers of Financial Institutions? Contracts Made in Heaven, Hell, and The Cloud in Between") offer a review of how technological innovation is changing transaction costs and therefore the economic and financial system. They explain the socio-economic impacts of "smart contracts": modules of computer code that run

on blockchains and can be programmed to transfer tokens of value, enable access to resources or otherwise automate functions based on conditions. This opens the perspective of increased access to critical financial services for all, creating more transparent democracies, and developing services that dramatically reduce barriers for global commerce. Panay (“Understanding Modern Banking Ledgers through Blockchain Technologies: Future of Transaction Processing and Smart Contracts on the Internet of Money”) deepens this understanding by illustrating how smart contracts can ensure financial stability. E.g. if the economy is growing too rapidly, the rate of money formation should be reduced over the next time period. In such instance, smart contracts working on behalf of a virtual organization could engage in purchases of foreign currencies in FOREX markets, as well as stabilize prices by purchasing bonds and equity in exchange for its stock of digital currency. Further, in order to quickly reduce the money supply outstanding, smart contracts could feasibly buy up existing digital currency and even destroy some of that currency by sending it to an unusable wallet address. This would have a similar effect to raising interest rates in that it would make money more scarce on the margin, that is, more expensive. Such intelligent virtual organizations running via smart contracts and acting as monetary authority can truly be removed from government, central authorities, or the influence from policymakers and corporate lobbying, thus opening the perspective of a more fair society with fair exchanges (Ulieru 2014).

Beyond the financial applications though, the Blockchain 2.0 movement is characterized by emergent attempts to build digital currencies with a focus on understanding the value created by online peer-production communities, and how such value can be used as a means to support and encourage the process of commons-based peer-production envisioned as a means of exchange for explicitly cooperative and collaborative enterprises that exist outside the logic of normal market processes.

Open question for those inspired by such Blockchain 2.0 platforms is whether blockchain systems can be a basis upon which people can easily interact with distant strangers for collaboration at scale. In this vision, the objective is to replace hierarchal centralized institutions with decentralized ones, but the point of doing this is (as we mentioned above) not to once-and-for-all perfect a means for naturally self-interested individual humans to contract with each other. Rather it is to allow naturally social beings to flourish and collaborate with each other in a spirit of cooperation, not individualistic competition. (Ulieru 2014). There are already creative initiatives to strengthen political accountability through the use of this technology. For example London mayoral candidate George Galloway is calling for the city to adopt Blockchain-based accounting in order to provide full transparency for the public of the city’s financial activities. The Mayor’s Chain Project aims to put the city’s annual budget on a Blockchain to foster collective auditing by citizens.

The Blockchain thus, creates incentive for participants to work honestly where rules are applied to all equally. The Blockchain fosters a true consent of the governed through voluntary participation and enables self-regulation taken up by each choosing to abide by the rule of consensus. Foremost, the Blockchain enables a larger function of accounting; performing checks and balance on the self interests

and the corruptible tendencies that exist in society. Unlike traditional representative models of governance, where systems of checks and balance are exercised through third parties, under bitcoin's consensus model, accountability is distributed directly and exercised by all in the network. With the blockchain's transparency, those who prefer profit without work will have no place to run and no place to hide. What emerges in this innovation is a new form of social accountability (Scott 2016). On this foundation we can envision a city network of informal street vendors running a collective mutual insurance pool between themselves using only their smartphones to interact with a distributed ledger system, with no central financial institution involved. Or a regional mutual credit system—effectively a ledger of credits and debits—implemented in a decentralized blockchain form (Scott 2016).

To this extent the blockchain becomes a technology for building new economies, as MacDonald, Allen, and Potts expose in the Chapter “Blockchains and the Boundaries of Self-Organized Economies: Predictions for the Future of Banking”. As “the secure, verifiable, trustless (i.e. cryptographically secure) mechanism to record the actions upon the rules” the Blockchain becomes a social technology for whole new institutional forms of economies. More precisely the Blockchain enables the deployment of emergent temporary catallaxies, aka economies rooted in the very “adhocracies” featured in the title, and which we introduced in the beginning of this concluding Chapter. As “a foundation for social order, built on mathematical truth as verified, rather than political force as threatened”, the Blockchain becomes “a source of welfare” acquired from releasing “the vast captured resources we have hitherto devoted to artificially manufacturing trust” into adhocracies that embody a “pure task economy where you find your people, you make your rules, and you do your thing”.

Pioneering examples of such decentralized collaborative platforms enabling the deployment of adhocracies include: Backfeed (<http://backfeed.cc/>)—a Blockchain-enabled reputation based platform aiming to eliminate intermediaries from peer-to-peer exchanges; Sensorica (<http://www.sensorica.co/>)—a maker platform for collaborative design of specialized high end technical products, which runs an original “Value Accounting System” on a “Network Resource Planning” background to guarantee that participants are rewarded fairly according to their respective contributions (Turgeon et al. 2014); and Hylo (<https://www.hylo.com/>)—a co-creation platform catalysing communities around common intentions to bring the right skill set and resources to the right project timely.

Future studies are needed to reveal the respective legal frameworks in which these and other platforms operate (Dawson and Bynghall 2011), as well as the viability of alternative governance models—combining regulation by code, smart contracts and social norms—implemented by these platforms on top of the legal framework, either as a complement or a supplement to the former. Hypotheses such as those posed by Bollier et al. (Bollier et al. 2015) regarding the deployment of collaborative entities that issue blockchain-based shares—or crypto-equity tokens—that give the holders ownership or membership rights in a type of decentralized cooperative, need to be tested. How such organizations might end up looking in the real world remains to be

seen, but they may be an interesting new form to explore in the quest to build social and solidarity-based finance (Scott 2016).

The ultimate quest concerns the emergence of adhocracies in a catalaxy and their societal transformative potential, with focus on how the Blockchain technologies enable implicit trusted exchanges in an open environment. In other words: How to enable large scale, free and systematic cooperation in a self-organizing manner that will produce constructive social and economic dynamics? (Ulieru 2014). How can social interactions be aligned with macro-level goals and how policies steering action towards goal achievement can emerge from such interactions? (Pitt et al. 2012). The answer we hope will contribute to the creation of more tools that facilitate the governance of online communities, and increase the innovative potential and productivity of commons-based peer-production platforms.

As an infrastructure which provides society's public records repository, a representative and participatory legal and governance system, Blockchain technology has the potential to benefit people with privacy, security and freedom of conveyance of data—which clearly ranks up there with life, liberty and the pursuit of happiness (Roszak 2016).

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### Author Biography



**Mihaela Ulieru** works with many governments and organizations seeking to make ICT an integral component policy making for a healthier, safer, more sustainable and innovation-driven world. She founded two research labs leading several international large-scale projects, among which: Organic Governance, Adaptive Risk Management, Self-organizing Security, Living Technologies and Emulating the Mind. Coaching young people to value relationships and making powerful introductions to assist them, has contributed to their ongoing success. One example is Garrett Camp, founder of StumbleUpon and Uber, whom she guided for his MSc degree one decade ago. For her results which have positively impacted citizens in emerging and advanced economies including Asia Pac, North America and Europe she was awarded, among many others, the “Industrial Research Chair in Intelligent Systems” and the “Canada

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