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## Blockchain and value systems in the sharing economy: The illustrative case of Backfeed

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## ABSTRACT

This article explores the potential of blockchain technology in enabling a new system of value that will better support the dynamics of social sharing. Our study begins with a discussion of the evolution of value perceptions in the history of economic thought. Starting with a view on value as a coordination mechanism that defines meaningful action within a certain context, we associate the price system with the establishment of capitalism and the industrial economy. We then discuss its relevance to the information economy, exhibited as the techno-economic context of the sharing economy, and identify new modalities of value creation that better reflect the social relations of sharing. Through the illustrative case of Backfeed, a new system of value is envisioned, comprising three layers: (a) production of value; (b) record of value; and (c) actualisation of value. In this framework, we discuss the solutions featured by Backfeed and describe a conceptual economic model of blockchain-based decentralised cooperation. We conclude with a tentative scenario for blockchain technology that can enable the creation of commons-oriented ecosystems in a sharing economy.

## 1. Introduction

Sharing is a perennial element found in human relations with varied significance and meaning. Whether it concerns tangible goods, such as food and water, or services, such as accommodation and transportation, sharing has always been a momentous practice determining different forms of sociality and political organisation. Nonetheless, the term ‘sharing’ has been rare in economics literature (Benkler, 2004), while the ‘sharing economy’ constitutes numerous contradictions in its purported functions and objectives, even claimed to be an oxymoron conceptually (Slee, 2016). Indeed, in the conventional understanding of the economy driven by rational action in pursuit of utility maximisation, the practice of sharing seems at least irrational and is restrained in the margins.

However, the Information and Communication Technology (ICT) revolution (Perez, 2002) has enabled new capacities for communication and sharing. For the first time, loosely affiliated individuals can self-organise on a project-specific or ad hoc basis and make voluntary contributions of their productive capacity. Starting from intangible contributions, like in Free and Open-Source Software and Wikipedia, to the sharing of rival material resources, such as computational power, lodging and automobiles, people started to create ‘large-scale, effective

systems for the provisioning of goods, services and resources’ (Benkler, 2004: 276).

This has provided the context for the ‘sharing economy’ to attain a certain drift, with reference to a stream of business models where individuals allow for the temporary usage of goods or services, facilitated by collaborative platforms (EC, 2016). The success of the sharing economy gives eminence to discussions over a great potential for innovation, growth and employment. A new world of opportunities opens up in response to the modern social and ecological issues (Kostakis et al., 2016a,b). Nevertheless, certain infelicities become evident with regards to privacy and misuse of data, (Slee, 2016); labour rights and conditions (Fuchs, 2010; Webster and Randle, 2016) and numerous legal and regulatory challenges (EC, 2016).

The creation of value in the sharing economy takes place in a collaborative environment and includes a wide variety of small-scale contributions. However, the created value is often channelled in the financial markets (Arvidsson and Colleoni, 2012). Although the creation of value is decentralised to the crowd, sometimes (e.g. as in Facebook or AirBnB) it is centralised command and control that determines the distribution of the rewards, in the form of rents, dividends and/or wages (if any) (Kostakis and Bauwens, 2014).

But, following Benkler (2004), shareable goods, actions and services

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have characteristics that make them indivisible and coarsely correlated with supply and demand, which poses many challenges to the market price system. On the contrary, non-market relations of social sharing provide a more efficient framework for their provision and exchange. Sharing is thus associated with economic production that is based on social relations. In turn, the sharing economy concerns the production of goods or services that are valued through mechanisms of social sharing.

From this perspective, this article seeks to answer one question: How can value, which is created through mechanisms of social sharing, be assessed and distributed? We approach this question from a normative perspective. Our inquiry does not concern value in the current successful ventures of the so-called 'sharing economy'. Rather we approach the sharing economy within the wider transformation of the ICT-driven techno-economic paradigm (Perez, 2002) and hypothesise a new system of value that better reflects the dynamics of social sharing. For this purpose, the main body of the paper is structured in three parts: (a) perceptions of value in the economy; (b) the techno-economic context of the sharing economy; and (c) transition to a new system of value. Each of these parts is briefly described in the following paragraphs.

For the first part (Section 2), we review perceptions of value in the economics literature. Our starting point is a perception of value stripped from its economic notion, viewed as a social coordination mechanism through which 'actions become meaningful to the actors by being incorporated in some larger social totality' (Graeber, 2001: XII). Industrialisation has been a historical milestone for humanity, providing the means to solve the contemporary agonising issues, including famine and plague. The industrial modality of production has been the foundation of such a 'social totality', determining the way in which actions had become meaningful, i.e. valuable. It is to a large extent based on this construct that the price system is justified as the single standard for value until today. We take a historical approach on theories of value to unveil the relative causations underneath this relation.

In the second part (Section 3) we examine the information economy, as the new modality of organising productive resources. We adhere to the definition of Castells (2010) pointing out to 'a specific form of social organisation in which information generation, processing, and transmission become the fundamental sources of productivity and power because of new technological conditions' (Castells, 2010: 21). We do not suggest that a new social order is technologically determined, but ICTs have set the conditions for sharing to become effective as an economic activity (Benkler, 2004). The sharing economy has thus strum from the information society, which is now the new social construct determining meaningful action. We investigate the techno-economic dynamics of the information economy and identify the current limitations for the sharing economy.

In the third part (Section 4), we synthesise the previous expositions to an analytical framework that serves to explore the transition to a new system of value from the industrial to the information society. Our suggested framework is structured on three layers: (a) production of value; (b) record of value; and (c) actualisation of value. Based on this framework, we palpate a new system of value through the exploration of a case study.

We have selected an illustrative case from the emerging ecosystem of the blockchain. Blockchain technology has been raising enthusiasm over a variety of disciplines, from information technology and finance, to law and economics. As the underlying technology of Bitcoin, the blockchain has been mostly discussed as a case of ICT revolutionising the financial and money sector. Nevertheless, it could be better understood as a (r)evolution in institutions, organisation and governance (Davidson et al., 2016:1). Its pervasive nature poses significant challenges to existing institutions and enhances the feasibility of a form of 'distributed social governance' (Veitas and Weinbaum, in press:10), while blockchain has been presented as the first native digital medium for value (Ito, 2016; Tapscott and Tapscott, 2016).

More specifically, the selected case is the project named 'Backfeed', which features a blockchain-based technological solution supporting decentralised social relations. Backfeed's social protocol helps people, who contribute to a common effort, evaluate each contribution and achieve consensus on the produced value and the distribution of rewards. The blockchain infrastructure keeps a permanent record of the evaluations ensuring transparency and security from corruption. We argue that Backfeed exemplifies a system of value that can unleash the full potential of the sharing economy, as it is more apt for social relations-based production.

The overall aim of the paper is to shed light on the potential of the blockchain in enabling more meritocratic and participatory governance models that may support sharing and commons-oriented communities to scale and become sustainable. Our approach is focusing on the modality of production, attempting to unveil certain trade-offs with value systems and the way they are interpreted in the broader socio-institutional sphere to establish a viable political economy.

## 2. Value in the history of economic thought

Our position is that the perception of value, within a certain techno-economic context, is instrumental to unlock the potential for societies to prosper. A historical approach is taken to rediscover the roots of the price system, which is understood as the currently dominant system to determine value. For this, we explore the main approaches on value in the economic thought at the turning point of industrialisation, as capitalism started to take off as a mode of production.

Before the establishment of capitalism as the dominant economic system, various philosophical and practical traditions had been elaborating on the concept of value. In antiquity, the Greeks had a normative perspective in relation to wealth focusing on what constitutes a 'good life'. The economy was considered as subordinate to political and ethical issues and economic phenomena were not investigated for their own sake (Sewall, 1901). This, however, did not hinder the development of very sophisticated approaches in economics.

Aristotle (1897) in *Ethics* suggested that value is expressed almost exclusively in the exchange of two things. However, he implied a distinction between value in use and value in exchange, arguing that the latter is subordinate to the former, as it is the usability of any good that makes someone desire it in an exchange. Aristotle understood people's demand for each other's goods or services as a standard of measurement of their value. In turn, representation of demand in money serves to equate the different types of labour applied to produce different types of things, so that they can be exchanged (Sewall, 1901).

The Christian theologians and the scholastics of the 13th century, led by Albert the Great and Thomas Aquinas, incorporated the Aristotelian theory of justice and economic exchange to crystallise the doctrine of the 'just price', which reflected the true value of commodities in exchange (Baldwin, 1959; Sewall, 1901). Overall, the unifying element of the approaches of antiquity and the medieval philosophy was that value serves a broader social necessity, bound to ethical and legal considerations rather than being a rational economic aim (Sewall, 1901). Analytical approaches were fundamentally normative and economics were considered to be part of justice and moral philosophy (Baldwin, 1959).

The following centuries were marked by the emergence of the nation state and the development of industrialisation and international trade. Smith in the *Wealth of Nations* (1776) arguably provided the first complete theory of value in modern economics. He explicitly stated and explored the basic dichotomy between 'value in use' and 'value in exchange', but, in contrast to Aristotle, Smith claimed that the first is not a determinant of the latter, neither necessary nor a prerequisite and refers to the famous water/ diamonds paradox to underpin his argument (Smith, 1776: IV). With his interest being in the principles that regulate commodity exchange, he studied the real measure for value in exchange and the real price for all commodities.

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