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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 the 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 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, comprised of 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 demonstrate a conceptual economic model of blockchain-based decentralised cooperation. We conclude that the blockchain technology has the potential to enable the creation of commons-oriented ecosystems in a sharing economy.

Keywords: blockchain; theory of value; information economy; Backfeed.

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 being an oxymoron conceptually (Slee, 2016). Indeed, in the conventional understanding of the economy driven by rational action in pursue 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 automo-

biles, people started to create 'large-scale, effective systems for the provisioning of goods, services and resources' (Benkler, 2004: 276).

This has provided the context of '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 & 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 & 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 & Bauwens, 2014).

But shareable goods, actions and services 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, social relations provide a more efficient framework for their provision and exchange (Benkler, 2004). Sharing is thus associated with the production of goods or services that are valued through mechanisms that rely on social relations.

From this perspective, this article seeks to answer one question: How could value be determined in the sharing economy? We approach this question from a normative position. Our inquiry does not concern how value is determined in today's successful ventures of the so-called sharing economy. We rather approach sharing within the wider transformation that is being effectuated by the ICT-driven techno-economic paradigm (Perez, 2002) and hypothesise a new system of value that better reflects its dynamics. For this purpose, we follow three interrelated streams concerning: (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.

For the first stream, our starting point is a perception of value stripped from its economic functions, viewed as a 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. In Section 2, we take a historical approach on theories of value in economics to unveil the relative causations underneath this relation.

The second stream concerns 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 organization 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. In Section 3 we examine the techno-economic dynamics of the information economy and identify the current limitations for the sharing economy.

For the third stream, we synthesise the previous expositions to a framework of analysis 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, in Section 4 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. The 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 & Weinbaum, 2016:10), while blockchain has been presented as the first native digital medium for value (Tapscott & Tapscott, 2016; Ito, 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 security from corruption and transparency. 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 aim of the paper is to contribute to the discussions over the potential of the blockchain in enabling more egalitarian and participatory governance models. Our approach is to unveil a set of trade-offs between value systems and the modality of production, and the way this is 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 in *Ethics* (1897) 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 rather than being a rational economic aim and in connection to ethical and legal considerations (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' (utility) 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.

A key point for Smith's comprehension for value is the division of labour. In a society with developed division of labour individuals produce only a small fraction of the goods or services that are necessary to satisfy their needs. Therefore, they have to exchange the products of their own labour to those of other people's labour. In this sense, Smith defined the value of any commodity as 'equal to the quantity of labour which it enables [the person who possesses it] to purchase or command' (1776: IV). For Smith the real price of every thing was the toil and trouble of acquiring it, understood as the deposition of a specific portion of one's ease, liberty and his happiness. Subsequently, the real price of every commodity exchanged for another one is the toil and trouble which it can save its possessor and which it can impose on other people (ibid: IV).

Labour thus represents this toil and trouble, 'the first price that was ever paid for all things' and the origin of all the wealth of the world (ibid:

V).This price is always the same, assuming an ordinary physical and mental state and is not varying in its own value. Therefore, Smith argued that labour alone can function as 'the ultimate and real standard by which the value of all commodities can at all times and places be estimated and compared. It is the real price of commodities; money is their nominal price only' (ibid: IV).

To place this perception into context, Smith's era was not the first time when the practice of exchange and the money economy appeared in human societies. But it was the first time that a certain techno-economic logic, based on the division of labour and industrial production, rationalised the prominence of trade as a crucial function for societies. In turn, the price system institutionalised exchange markets as the determinants of the value of things. Smith, recognised this function of the price system by assuming a 'natural price', at which commodities are sold *precisely* for what they are worth (ibid: VII). A price that would provide an accurate compensation covering rent for land, wages for labour and profit for capital. Economics started to transform as a scientific discipline and shifted away from the medieval pursue of the 'just price', towards the examination of a divine-like 'natural' order, assumed to be achieved by the efficient and precise function of markets.

Later theories made this relation even clearer. Ricardo developed his theory of value in the third edition of *Principles* (1821), at first, as a critique on Smith. Ricardo accepted the distinction between use and exchange value, but explicitly regarded the latter as the only one concerning economic analysis, while he was the first one to associate exchange value with scarcity (Hollander, 1904). Ricardo was also the last classical political economist to adhere to the labour theory of value. Mill (1848) completely dismissed the labour theory of value and argued for a measurement of value of any thing as the 'command its possession gives over purchasable commodities in general' (1848: Part III.1.5). Later on, Jevons (1871) developed the concept of marginal utility, giving rise to a whole new generation of economists, including L. Walras, C. Menger, A. Marshall and V. Pareto, as well as M. Friedman and neo-liberal scholars of the 20th century. These views have completed the shift in economic thought. They dismiss any material embodiments of value and overemphasise the efficacy of free markets in coordinating any sort of meaningful action in societies, based on generalised assumptions, such as utility-maximisation and equilibrium (Walras, 1874; Marshall, 1890).

The historical conditions influenced the gradual transformation of the perception of value, so as to efficiently coordinate human sociality towards what has been generally perceived as beneficial. The industrial

revolution has effectuated the key factors that distinguish a new economic system, which Sombart (1902) would later call *capitalism*: 'a particular economic system, recognisable as an organisation of trade, consisting invariably of two collaborating sections of population, the owners of the means of production, who also manage them, and property-less workers, bound to the markets which they serve' (Sombart, 1902 in Gibson et al, 1996: 3). An economic system that by its definition was increasingly dependent on trade has led to a perception of value as exchange power inevitably dominating the economic thought (Sewall, 1901). Money became the primary commodity acquiring exchange value and the concept of value became almost interchangeable with price. Global governance has been to a large extend focusing on regulation of international trade, with supranational institutions like the General Agreement on Tariffs and Trade (1947) and the European common market initiatives, starting with the European Coal and Steel Community (1951) that evolved to the European Union.

But markets require precision, cost effectiveness and a rational pursue of profit maximisation, aspects that are hard-wired in the capitalist business spirit. The art of systematic bookkeeping, born in the commercial centres of the Italian city states in the 14th century, provided this framework for the advance of trade (Yamey, 1949). Sombart (1902) has eloquently emphasised the role of double-entry bookkeeping in stimulating and intensifying the capitalist spirit (Yamey, 1964). Capitalism and double-entry for Sombart are so intimately connected, that it is difficult to tell which one was the cause and which one the effect. On one hand, capitalism has procured in double-entry bookkeeping a tool which activates its forces, while on the other hand, the latter has accentuated capitalism out of its own spirit.

Double-entry bookkeeping allowed for the standardised quantification of the results of all business activities and the reduction of assets and equities to numerical abstractions. It has thus provided a rational basis for strategic decisions and resource allocation and clarified business aims through a simple representation of win or loss (Yamey, 1964; Gibson et al, 1996). This systematic organisation of all business aims propelled discipline, control, practicality and depersonalisation into the logic of enterprise. The gradual dismissal of the labour theory of value in the evolution of economic though has been only indicative of this abstraction of the social productive relations to the mathematical logic of double-entry bookkeeping.

Elaborating on this element of abstraction, Marx offered a different interpretation on value. In the first volume of *The Capital* (1867), Marx distinguished the 'capitalist mode of production' from simple commodity pro-

duction, as studied by classical political economists (King & McLure, 2015). Whereas in pre-capitalist conditions commodities would be valued in exchange according to the labour expended in their production, capitalist production, he argued, 'is not merely the production of commodities, it is essentially the production of surplus-value' (1867:359). In capitalism the fundamental aspect of goods is their quantitative relation with money, which allows them to exchange as commodities (Fuchs, 2010).

In this sense, for Marx exchange value in capitalism is rather a manifestation of the structural relations than a direct result of labour. It is a property that the products of labour acquire, which is only actualised in the market through their exchangeability as commodities (Milios et al, 2002). Therefore, the production for exchange and profit in capitalism leads to an expression of value as a product of 'homogenised labour processes', what Marx encapsulated to the concept of 'abstract labour' (1867:39).

Marx, much like the classical economists, distinguished use value and exchange value. However, he identified a qualitative and quantitative element in the two forms. He held that in capitalist production there are two processes of labour identified: First, concrete labour, which produces use values, the qualitative element of goods, representing 'the everlasting nature-imposed condition of human existence' (Marx, 1867:130); and second, abstract labour, which creates exchange value expressed in a quantitative relation with money (Milios et al, 2002; Fuchs, 2010; 2012). Hence, for Marx the value of commodities does not hold any connection with their material substance or usability.

It becomes evident how a particular modality of production has organically transformed the perception of value, in the sense of defining meaningful action within a broader social totality (Graeber, 2001). The production processes in the capitalist mode of production have shifted away from the production of goods that have actual usability, towards the production of goods that can be exchanged for other ones. Subsequently, the system of value has to fulfil the purpose of making commodities commensurable, as they embody different types and amounts of labour, so that the exchange could take place.

The classical political economists, even though they acknowledged the problem of incommensurability of labours, assumed a natural order imposed by market mechanisms that would achieve the type of precision required for exchange (Meikle, 1995). Marx, on the contrary, argued that resolving incommensurability in exchange results in stripping the products of labour of their qualitative characteristics. The value of things is divorced from their usability and the labour they embody turns to 'labour

of equal quality' (abstract labour) (Marx, 1867:40; Milios et al, 2002). While this has been fulfilling a practical necessity in the industrial economy, in the context of the information economy it is associated with certain discrepancies, as we examine in the following section.

3. Value in the information economy

The term 'information economy' generally connotes an economy in which production is associated with knowledge, communication and information, as opposed to other kinds of activities (Porat, 1977). The term has been elsewhere referred as 'post-industrial economy' or 'knowledge economy' (Machlup, 1962; Bell, 1973; Drucker, 1968), which alludes to a deeper transformation, than a simple protrusion of information in the productive processes. Information, in its broader sense, has been an important element in the development of all societies. In the information economy, however, the difference lies in the new technological conditions that result to a new form of social organisation, where 'information generation, processing, and transmission become the fundamental sources of productivity and power (Castells, 2010: 21).

Those ICT-driven conditions have enabled the practice of social sharing to gain economic significance. The sharing economy has thus been actuated in the information economy and within this framework we explore its dynamics. Likewise, the concerns over the sharing economy can be interpreted within a wider reformation, as a series of riddles that have 'techno-economic origin and socio-institutional solution' (Perez, 2004: 1).

The first riddle concerns the transformation of work and the nature of labour. Wealth creation in the information economy depends on socialised productive processes (Rullani, 2004; Arvidsson & Colleoni, 2012). Value is increasingly created in collaborative processes by a 'multitude' (Hardt & Negri, 2004) of diverse actors, and thus labour is less susceptible to control and measurement. Labour becomes immaterial (Hardt & Negri, 2000), that is more qualitative and ever more complex, while intangible assets gain significance in corporate value assessment (Arvidsson & Colleoni, 2012).

The immeasurability of value (Hardt & Negri, 2000) poses strong challenges for the conventional practices of management and accounting (Toms, 2008). The rationality of the price system is decreasing. This 'value beyond measure' (Hardt & Negri, 2000: 355) is more or less directly channelled to financial markets, whereas the latter 'are not so much rational as they are affective' (Arvidsson & Colleoni, 2012:141).

The importance of financial markets in the information economy is associated with an evaluation system based on sentimental projections of future earnings.

The second riddle concerns the nature of information as a product of human sociality. Rigi & Prey (2015) advocate that informational content alone does not possess any exchange value, as it is non-rivalrous and it can be reproduced at negligible cost and time. The value of commodities has been traditionally associated with scarcity, while information production operates in the logic of abundance. Hence, the produced information does not classify as a commodity but rather as universal commons. Bollier (2014) defines the commons as a shared resource, co-governed by its community of users according to their rules and norms. Information production refers to the digital commons of software, knowledge, design and cultute. Nonetheless, as Castells' (2010) definition implies, the information commons represents mutualised productive resources that are central to the capacity for any kind of production, including physical goods.

The interest in the commons is not restrained on the management of the resources, but it also concerns the accompanying social practice of working together on equal footing for a common purpose, referred to as 'commoning' (Bollier, 2016). In fact, commoning goes beyond the management of common-pool resources (Ostrom, 1990) and it is connected to the creation of new forms of governance and provisioning of goods and services. In the information economy, the commoning dynamic is exemplified by the myriads of Free and Open-Source Software projects or the free encyclopaedia Wikipedia. It is related to a new mode of production, different from private for-profit or public state-owned production, which Benkler (2006) called commons-based peer production (CBPP). Its product primarily possesses use value for a community of users/producers. Those are self-organised in productive structures, beyond traditional hierarchy and central coordination, and make use of common property regimes to make use value freely accessible (Bauwens, 2005).

However, the socio-institutional arrangements that govern today's economy are still to a large extend associated with the capitalist mode of production. Marx (1867) unveiled an antagonistic relation of use value and exchange value in capitalist production: The first serves the collective social interest, whereas the second the individual private objectives. This relation is further eradicated in the context of information, due to its non-rivalry form. With exchange value being the one dominating economic affairs, it is imposed on the information commons through artificial scarcity and enclosure. In turn, the market value extracted constitutes a form of monopoly rent (Rigi & Prey, 2015).

Therefore, the Marxist analysis of concrete and abstract labour remains relevant in the information economy (Fuchs, 2012). For instance, the activity of Facebook users is concrete labour that produces 'informational content' that embodies use value (Fuchs, 2012:187). This content is then commodified and exchanged to media advertisers, and the control of this process is in the hands of the owners of the infrastructure (Kostakis & Bauwens, 2014). The users are also the audience for advertising and their attention is also commodity that is actually measurable in terms of aggregated time of social labour (Fuchs, 2012).

Clearly, CBPP unseals a political economy that goes beyond the Marxian framework of critique and negates the conventional canons of value altogether (Rigi & Prey, 2015). It inaugurates forms of governance indigenous to the information economy that encapsulate its transformative dynamics. Nevertheless, as long as CBPP remains subsumed under the rules of the markets and the abstracted logic of capitalism, it will still fall within the reach of Marx's analysis (Rigi & Prey, 2015). Admittedly, the best possible development in the Marxian theory of value is to be made obsolete by a radical change in the productive relations beyond capitalism.

The commons could function as the fabric of such a transformation. Helfrich offers an interpretation of the commons as 'an important form of transpersonal rationality and coordination; a new category that describes the individual-in-relation-with-others' (in Bollier, 2016: 20). Similarly, sharing is a different form of coordination of human sociality that makes sense within a certain techno-economic context. The same way that the industrial economy and the capitalist mode of production rationalised production for exchange, the information economy and CBPP rationalise production for sharing. It is hence within the sphere of CBPP that we are to seek a genuine sharing economy (Kostakis & Bauwens, 2014).

In this perception, the term 'sharing economy' infers something more than simply sharing becoming an economically relevant practice, in terms of becoming rational within a certain economic system. It portrays a new system of value in which sharing is the common sense that guides human behaviour towards what is perceived as the common good. In the following section we pursue this particular exploration through the case of Backfeed. We attempt to address our main research question, by framing the logic of a system of value, in which the value of sharing could be determined.

4. Backfeed and decentralised cooperation

Value is understood as an abstraction of human relations. It is a coordination mechanism that operates on a cognitive level, guiding individual and

collective behaviour. It only becomes real at the end of this process, when the effect of this collective cognition becomes evident. The system of value thus provides the locus of this process, determining how human action is formed, motivated and interpreted.

We suggest that this relation can be observed in three interrelated layers: (a) production of value; (b) record of value; and (c) actualisation of value. The first one refers to the modality of production, which rationalises a particular form of action as a meaningful contribution to the societal needs. The capitalist mode of production has been associated with exclusive ownership and control of the means of production, hierarchical command of labour and the production of surplus value. Respectively, CBPP is characterised by collective ownership and management of resources, flat coordination, self-identified and permissionless contributions and the production of social value.

The second layer concerns a systematisation of coordinated assessment, which provides the means to motivate and nourish such meaningful action, allowing the system to scale and become sustainable. This layer contains the method used to track and record the produced value, which to a large extent crystallises the logic of the established economic system. We saw the role of the double-entry bookkeeping system in unleashing and stimulating the business activities of capitalism. Double-entry bookkeeping had conveyed the logic of mathematical precision and abstraction to business operations and hard-wired it into the price system. It had been born as a practice of merchants and has been thus endemic to trade, the engine of the capitalist mode of production. Likewise, it has been argued that the first native digital medium for value is the blockchain (Tapscott & Tapscott, 2016; Ito, 2016). As a technology it has sprung from a combination of ICTs with the purpose of documenting peer-to-peer operations. The blockchain could be the medium that would support the polycentricity, fluid coordination and multiplicity of contributions found in CBPP.

The third layer includes the development of a common sense that rationalises meaningful action within the logic of an economic system. It is where value becomes real in an economic system, justifying people's choices and struggles. In capitalism, as we saw earlier, the value of commodities is a property that they carry on from their production, but is only actualised in markets, through their exchange for other commodities. This value is interpreted through a nominal representation in monetary units, determining both the means and the ends of the productive process. Accordingly, in the information economy, sharing represents the type of social relations that make the use value of information commons perceptible. It is where

an economic system is crated, which rationalises people's capacity to share, in the sense of contributing to and benefiting from the commons.

The sharing economy is arguably where the real value of shareable goods is actualised, through the efficient provisioning of the socially produced use value. It is the final layer of a new system of value that effectively attributes to the social productive relations their qualitative elements.

In the following sections an in-depth presentation of Backfeed is provided. We use the above described framework to discuss how the three layers of value operate in the ecosystem envisioned from Backfeed, illustrating a new system of value.

4.1 The blockchain (r)evolution

Backfeed is a social operating system for decentralised organisations. It builds upon blockchain technology to develop a distributed governance model for decentralised value creation and distribution (Davidson et al, 2016). Before presenting the Backfeed model, we introduce its technological backbone: the blockchain technology and the practices associated with it. As most existing implementations of the blockchain are to a large extent on an experimental phase, there is still no definite terminology to describe the relevant concepts.

A blockchain is a distributed ledger or database of transactions recorded in a distributed manner, by a decentralised network of computers (Wright & De Filippi, 2015:6). As the name implies, it is organised in a linear sequence of smaller encrypted datasets called 'blocks', which contain timestamped batches of transactions. Each block contains a reference to its precedent block and an answer to a complex mathematical puzzle, which serves to validate the transactions it contains. The innovation behind the blockchain emerges from a combination of existing technologies: peer-to-peer networks; cryptographic algorithms; distributed data storage and decentralised consensus mechanisms (Wright & De Filippi, 2015). As a general purpose technology (Davidson et al, 2016), the blockchain serves as a means to record, in a secure and verifiable manner, a particular state of affairs which has been agreed upon by the network (Wright & De Filippi, 2015). As such, the blockchain can be used in any system that comprises valuable information, including money, titles, deeds, intellectual property rights and even votes or identity register data (Davidson et al, 2016; Tapscott & Tapscott, 2016).

Blockchain was first introduced as the underlying technology of the crypto-currency Bitcoin (Swan, 2015). Trying to solve the problem of double-spending within a peer-to-peer electronic cash system (Nakamoto,

2008), Bitcoin introduced two innovative solutions: (a) the blockchain, a decentralised, immutable and incorruptible public ledger shared by all network nodes; and (b) the 'Proof-of-Work' consensus protocol, a method used to decide on the validity of the transactions recorded on the blockchain (Davidson et al, 2016). The Proof-of-Work mechanism comes as a complement to the blockchain. It improves its security by requiring network nodes to solve computationally-intensive mathematical problems before they can validate a particular block of transactions. A new block is added to the blockchain only after the network has reached consensus about the validity of all the transactions contained into that block (Wright & De Filippi, 2015). New Bitcoin tokens are simultaneously awarded by the network to the first user that solves the mathematical problem related to any given block. This process, called 'mining', is designed to reward people for contributing computational power to the Bitcoin network, to secure the network whilst supporting its growth.

Bitcoin is the first concrete example of a distributed network with an intrinsic incentive mechanism (Van Valkenburgh et al, 2014). Following Bitcoin's innovation, there has been an increasing interest to explore the potential of blockchain technology in other fields of human activity. New applications have been developed with the blockchain, including digital currencies, self-executing smart contracts platforms, along with many financial and non-financial services (Wright & De Filippi, 2015).

4.2 Justification and methods

Backfeed presents a conceptual model that makes the case for a new form of governance with an incentivisation system implemented on the blockchain. There are many online communities that practice cooperate in a decentralised manner, as in the case of Free and Open-Source Software, Wikipedia, OpenStreetMaps, CouchSurfing or WikiHouse. Such communities aggregate smaller and larger contributions from a large number of people cooperating for the achievement of a common goal.

Yet, while some of these communities have acquired a sufficient degree of visibility to become self-sustainable, the majority of such communities operate on a very small scale, often on a local territory or in a niche area. These communities often comprise a small handful of highly motivated contributors, and a slightly larger number of people who contribute on an ad hoc basis (Fuster Morell et al, 2014). Because they do not have a proper incentivisation system inherent into their governance structure, these communities are often having a hard time attracting new contributors beyond the highly intrinsically motivated individuals (Arvidsson et al, 2016).

Hence, scaling up for these communities usually means formalising into a more rigid hierarchical structure and adopting a market-oriented approach. The community starts to turn into a company or other legal entity to accumulate necessary funds and reward contributors with economic returns. This approach often conflicts with the original intentions of the community, which is generally focused towards building social relations and promoting cooperation amongst a distributed network of peers, rather than increasing profits. This issue was very well illustrated by the shift of CouchSurfing from a non-profit to a B-corporation, which led to the gradual dissipation of the community members, who no longer could reflect themselves into the value system of the new entity (Johnson, 2011; Bauwens, 2011).

The Backfeed model represents a potential answer to these problems. It enables a type of governance that reflects the decentralised approach seen in most of these communities, as well as a reward system based on the perceived value of every contribution. Backfeed intends to support a dynamic governance structure that does not focus on a set of predefined roles and tasks, but rather on an open and meritocratic model, where everyone is free to contribute to a particular community in the way they see most fit. In turn they are rewarded with reputation that reflects their influence in the governance of the community. Also, they receive an economic compensation in the form of digital tokens, which can be used to benefit from the services offered by the community, but also represent an actual (equity) share in the organisation.

This is especially relevant for the sharing economy, which mostly relies on a centralised crowd-sourcing model, where people contribute to a platform but do not actually benefit from its success. With Backfeed, every community member is at the same a contributor and an actual shareholder in the service provided by the community. Hence, everyone has an incentive to maximise the value of that service, as the most successful it is, the greater the potential benefits will be.

In terms of methods, Backfeed is approached as an intrinsic case study (Stake, 1994). The main motivation is to develop a deeper understanding of this particular case for its own sake, as it is of particular interest with regard to the employment of the blockchain technology in relation to value systems. Moreover, the authors adopted a participatory approach to case-study research, where internal participants of the case contribute to the research, thus providing better insight of the underlying processes of the issue within its contextual setting (Reilly, 2010). One of the authors is among the instigators of Backfeed, while the other two authors have provided critical checks and balances against bias or predisposition towards verification of the examined notions.

The adoption of the participatory approach serves to present certain insights and issues that are significant to the people involved in the case, who also participate as co-researchers (Reilly, 2010; Reason & Bradbury, 2007). In participatory research the primary purpose is to produce practical knowledge that is useful to the interested social groups and to create new forms of knowledge from a particular setting (Reason & Bradbury, 2007). The outcome of participatory research is a change or improvement of the investigated case, rather than reproducible and generalisable findings. Therefore, an objective and positive approach is not the most suitable, while critical subjectivity and reflexivity offer more value. In turn, researchers benefit from the better insights by engaging an equal partner with insider view and knowledge, while gaining confidence in the interpretation of the data, since they are founded on authentic experiences (Reilly, 2010).

The Backfeed model is mostly theoretical and based on a superficial understanding of how it could apply in practice to real-world communities. Given the early stage of the technology, there is no robust empirical evidence with regard to the practical implementation of this model. Nevertheless, the case is supported by data collected from an early experimental trial. The Backfeed protocol has been tested with the OuiShare community, a network of researchers, activists and entrepreneurs from the sharing economy, who were eager to experiment with a more decentralised system to deal with the organization of the OuiShare festival in Paris, 2015. The experiment began with a kick-off meeting in October 2015 and had been going on over the course of the following six months preceding the start of the festival (May 2016).

The participatory approach was adopted in the experiment as well. Selected participants from the OuiShare community were engaged in the research to contribute with a deeper understanding of the collaborative dynamics, which came into play within this particular setting. The people behind the Backfeed project, including one of the authors, had several in-person meetings with the members of the OuiShare community that participated in the trial. The goal was to collect direct feedback on the issues that were encountered with the platform, and react expediently to fix these issues. Overall, the experiment did not work as well as originally expected, but it had provided important insights on how to tweak and refine the Backfeed protocol so as to better suit the needs of this community.

In the rest of this section we first present the conceptual model of Backfeed and then we discuss it in connection with the theoretical framework. Finally, we summarise the main takeaways from the OuiShare experiment, along with the main limitations of the model. The primary aim is to

understand how Backfeed is potentially related to a new system of value that could support the operations and long-term sustainability of CBPP.

4.3 The case of Backfeed

Bitcoin has marked the beginning of a nascent industry of distributed applications with the issuance of tokens on a blockchain (Van Valkenburgh et al, 2014). These tokens represent a generic and measurable unit of value, imbued with the rules of the network that issued them. Most of these applications implement a specific protocol for the issuance of these tokens. Typically, they provide incentives for users to commit resources to the network and, thus, secure transactions without the need of a trusted intermediary. As long as people trust the underlying technological infrastructure, it is possible for them to engage in peer-to-peer transactions. But when it comes to more complex social relationships, involving sharing of resources and assets, the blockchain technology alone does not suffice for people to develop trusted interactions.

To address this issue, Backfeed has developed an additional trust layer, based on human relations, which enables people to engage in secure and decentralised trusted interactions on top of the 'trustless' blockchain technology. For the purposes of this presentation we introduce a new type of organisational structure called 'Decentralised Cooperation' (DC). The DC encapsulates any type of structure that allows autonomous agents to collaborate and achieve a common goal, by making spontaneous contributions with no central coordination or ruling authority.

The inspiration for Backfeed has been 'stigmergy': a form of indirect coordination encountered in certain species of animals (such as ants, termites and birds), where individual agents leave trace in their environment, so as to inform the actions of other agents (Davidson et al, 2016; Marsh & Onof, 2007). Backfeed builds on blockchain technology to replicate the same model in the context of spontaneously emerging networks of peers. This is achieved through a social operating system, representing a generic protocol layer that sits in-between the blockchain infrastructure and the actual applications that are deployed on the blockchain. This protocol layer operates on top of the blockchain to determine how value is created and distributed in a DC, in similar manner that the HTTP layer operates on top of ICP/IP to determine how information is transmitted on the World Wide Web. It thus makes it possible for people to effectively manage, coordinate and reward contributions, while they collectively develop and deploy applications on the blockchain.

In order to establish the value contributed to a DC, Backfeed elaborated a new consensus protocol named 'Proof-of-Value' (PoV), which consists of: (a) a peer-to-peer evaluation system used to determine the perceived value

of the various contributions; and (b) a reputation system that allocates influence according to the value contributed and the alignment with the overall perception of value of the community (Davidson et al, 2016). Without getting into too many technical details, we describe how these three components of the Backfeed protocol are put into practice in a potential DC.

Agents in a distributed network can contribute freely and in a spontaneous manner to an organisation's goal. An agent can be an individual or one facet of an individual (as an individual can be split into multiple agents), as well as a group of individuals, or any other entity that can act as an independent unit (e.g. a DC can be an agent in another DC). All agents in a DC have a unique account that tracks the record of actions (i.e. a historical log of contributions and evaluations) and record of equity (i.e. their balance of tokens and reputation score over time). Their contributions can consist of any action with potential value, tangible or intangible, for the DC; for instance a new piece of code snippet, a design, an idea or a service. The value of each contribution is determined through a participatory evaluation process, where agents evaluate contributions (including their own) in accordance to a reputation score. This process indicates their influence within the organisation.

Whenever a contribution is positively evaluated within the DC community, a reward is distributed to the contributor. The reward consists of a specified amount of economic tokens and reputation. Token distribution serves to incentivise agents to make contributions to the DC, while the reputation score indicates their alignment with the value system of a community. The overall evaluation of a specific contribution is calculated by the system based on the reputation score. The amount of tokens distributed to the contributor depends on the median value of all weighted evaluations, accounting for the total reputation of the DC and not just that of the evaluators. Tokens are issued after a minimum of 50% of the DC community's reputation took part in the evaluation of a certain contribution.

Tokens in a DC serve as transferable value-carrying units that can be used as items of reward, media of exchange, means of payment and measure for wealth. They simply indicate that the value has been created, so they do not provide a link to the individual that they were initially issued. Hence, they may be transferred and exchanged similarly to most currencies. Conversely, reputation indicates the level of alignment an individual has to the DC's value system. As such, reputation may not be transferred as it is linked to the agent who has earned it.

The reputation score can increase in two ways: (a) through a contribution that is perceived as valuable by (all or a part of) the community; and (b) through a useful evaluation of others' contributions, meaning an evalua-

tion that is retrospectively aligned with the evaluations of the rest of the community. Thus, the objects of evaluation are not only the contributions to the organisation, but also the alignment of these evaluations with respect to the overall value system of the organisation. Reputation is issued to contributors whenever the median value of their respective contributions reaches a positive value, i.e. when more than 50% of the DC reputation considers that a contribution is valuable. Therefore, new reputation cannot be issued without consensus within the community. The precise amount of reputation to be issued for each evaluation is specifically defined, on a case-by-case basis, for each individual DC, based on the chosen evaluation set (i.e. the set of possible values with which a person can evaluate a contribution, e.g. on a scale from 1 to 5).

To make an evaluation, agents need to put some of their reputation at stake, meaning that a certain fraction of the evaluator's reputation is deducted from its overall reputation upon making an evaluation. The protocol encourages people to evaluate contributions at an early stage. This is achieved by reallocating the reputation stake of each evaluation to all the evaluators that have been aligned earlier. Hence, the earlier an evaluation is made, the greater are the potential rewards to be earned. Eventually, as others evaluate the same contribution with a similar evaluation, those who are the most in line with the overall community's evaluation will be able to retrieve the reputation they lost, and often gain more reputation than they initially had.

4.4 Backfeed economic model

Backfeed introduces an economic model that could enable self-organised communities of contributors to bootstrap, manage, coordinate and sustain a DC. Central in this model is the issuance and distribution of economic tokens, as transferable and exchangeable units of value. A lifecycle is envisaged for DCs that consists of three sequential and overlapping phases, which are related to the evolution of the function and value of the digital tokens. These three phases that altogether constitute a DC lifecycle are:

- *Digital tokens as equity*. An initial group of risk-taking individuals invest work and resources to the DC to accumulate tokens. At this stage, tokens merely represent equity share in the DC. The issuing of new tokens is a means to secure an initial burst of contributions, as new tokens are issued whenever new value is created or added. At this point, the value of the tokens is purely speculative and depends on the expected value of the products or services that the DC will provide.
- *Digital tokens as commodity*. As the DC starts offering a certain product or service, the tokens acquire actual market value, as the

only way to benefit from those products or services is by spending these tokens. The market value of their tokens depends on the perceived value of the services that the DC provides. People can collect tokens either by contributing directly to the DC operations or by purchasing them from the current token holders.

- *Digital tokens as currency*. In case the DC reaches a specific level of maturity with a stable user-base, the token value can be crystallised into a more steady value. This follows a decision by the DC to establish a price cap (or upper margin) at which it will start selling tokens to prevent the market price from exceed this margin. DC tokens eventually become redeemable against a specific amount of fiat currency or other digital tokens, therefore completing the DC lifecycle. The price cap mechanism serves to eliminate the volatility against market pressures. It also creates a reserve of funds in the DC that may enable people to redeem their tokens directly to the DC (regardless of market price) at a 100% reserve price. So, every DC token can be redeemed at a fraction of the funds held by the DC. For instance, if the DC has accumulated $1.000 and issued 10.000 tokens over the course of its existence, each token will be redeemable for a value of $0.1, regardless of whether the market price is higher or lower. If the market price is higher, people will exchange their tokens on the market rather than redeeming them. On the contrary, if the market value is lower than then redeem value, people will be incentivised to redeem their tokens against the DC. As a result, the total amount of tokens in circulation will drop, thus increasing the market value, up until the point in which the market value will match the redeem value.

These three phases interrelate to synthesise the DC lifecycle. Although they are distinctive, they actually coexist and frame the interaction of the agents and DCs in a broader ecosystem. In this context, DC tokens can be obtained in three different ways: (a) as a reward for those who contribute to a DC, according to the value they add; (b) through purchase on the market from contributors, for those who did not contribute; and (c) through purchase directly from the DC, in case the DC is offering tokens at a price for other currencies.

In turn, the value of DC tokens can be related to three different factors, namely: (a) their actual use value that depends on the perceived value of the services the DC provides; (b) their market price that fluctuates according to current and expected use value of the token; and (c) the price at which they can be redeemed against the DC for fiat currency or digital tokens. Figure 1 graphically presents the interaction of contributors and non-contributors in the context of a DC.

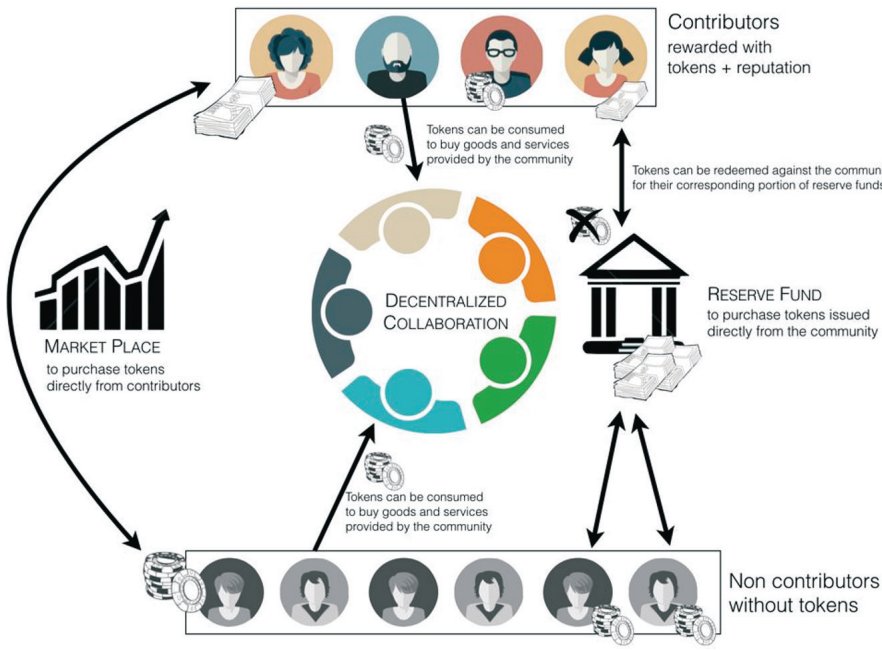

Figure 1: Flowchart of contributors & non-contributors interacting with a DC. Retrieved from: 'Economic Model', Technical Resources, in: Backfeed, URL: http://backfeed.cc/technical-resources (accessed: 15 January 2017).

The economic model introduced by Backfeed suggests that every DC can set up its own tokens to represent the value system that organically emerges through its evolution. Each DC may feature a unique value system, placing emphasis on the elements that its purpose or vision values the most. In this sense, every set of DC tokens is an expression of at least two forms of value: (a) the specific conception(s) of value that characterises the DC, which will determine the issuance and distribution of tokens within the DC; and (b) the value provided by the DC within the broader ecosystem, which will determine the exchange rate of the DC tokens against fiat currency or other digital tokens.

Hence, we can imagine an ecosystem made up of several DCs, where a multiplicity of value systems emerge out of their interaction. Mutually interacting DCs are the constitutive elements of this ecosystem and support each other according to the extent at which they need each other's services. For instance, if an eco-farming DC was to value the products from a local distribution store, as well as the services provided by a nearby FabLab, it would not only evaluate their contributions in a positive manner. It would also contribute to these DCs, or at least invest in the

purchase of their corresponding DC tokens, to benefit from their products and services. Similarly, if the FabLab wanted to purchase biological products to feed its community, it would either need to contribute to the eco-farming DC or purchase some of its tokens, thus indirectly increasing the market value of these tokens.

As the ecosystem evolves, certain DCs, rather than maintaining their reserve funds in regular fiat currency, may couple to other, possibly more established DCs, whose services may be highly demanded or perhaps simply complementary to their own. Therefore, a dynamic exchange rate will be established amongst different types of tokens, depending on the relative value of their corresponding DC in the overall ecosystem. This could lead, over time, to the formation of a multilateral market for DC tokens, ultimately making it possible for people to bypass fiat currency altogether.

4.5 Discussion

The innovation of Bitcoin disrupted the global financial system, by featuring a decentralised digital currency and payment system that is governed by no government or financial institution. However, the value system encoded in the Bitcoin protocol is not much different from the conventional price system. It thus lacks the agility to effectively respond to the dynamics of sharing. On the contrary, the PoV protocol does not rely on a predefined perception of value that is then merely quantifiably represented in some sort of currency. It rather encapsulates a multiplicity of different perceptions of value. By generalising the process of mining, Backfeed is inclusive to a much wider variety of contributions: anything that is believed to bring value to the community. The PoV protocol shifts the focus from algorithms to human relations and rewards active participation and meaningful contributions in line with the community values.

In relation to the three layers of value described earlier, the DC represents the core of value creation with regards to the first layer. Backfeed rationalises the dynamics of CBPP, by incentivising people to make meaningful contributions to a common goal. The contributors are engaged with no predefined roles and tasks and permissionlessly share their creative energy or other resources with the community. A commons is created embodying use value that is managed and utilised according to the rules of the community.

On the second layer, Backfeed deploys one of the most promising functions of the blockchain: a decentralised record of value with the ability to encapsulate qualitatively different contributions. The PoV protocol offers a mechanism for decentralised consensus that determines the value of

each contribution. Simultaneously, a reputation system promotes merit within the community, in correlation with the level of engagement in its common goal and alignment with its values. It thus systematises a perception of value that is attached to meaningful collaboration. Eventually, Backfeed arguably supports greater pluralism in the variety of contributions and polycentricity in the governance of social relations.

Finally, in relation to the third layer, a model for a new type of economy is envisioned, where value reflects people's capacity to engage in sharing, in terms of contributing to and benefiting from a commons-oriented process. This is achievable through the function of tokens, which is connected with active participation and actual interest in the operation of a DC. The value of tokens becomes real for the people by allowing them to benefit from the products and services produced in the DC ecosystem. This way, the tokens of a DC are in quanta of value that represent the perceived social benefit from its respective products or services.
The interrelation of Backfeed with the three layers of value is graphically presented in Figure 2 below.

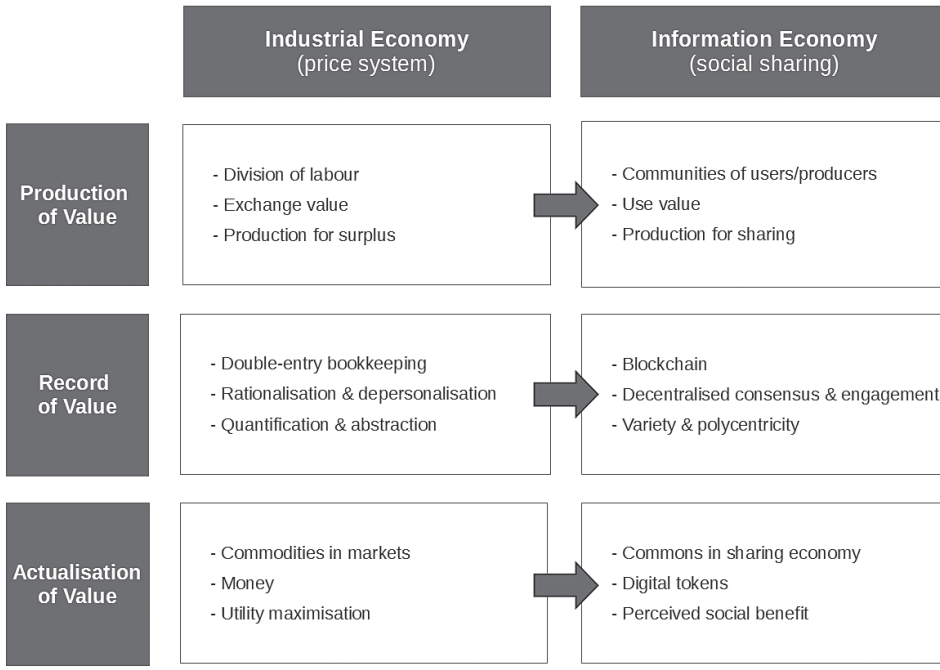

Figure 2: The transition from the Industrial Economy to the Information Economy and the associated systems of value. Retrieved from: Authors' own work. Licensed under CC-BY-SA 4.0.

Last but not least, the system of value effectuated by Backfeed facilitates the development of a new business logic, where the community of users/producers is in control of the organisation's aims. Hierarchical command and control is no longer relevant, as individuals benefit from the mutualised resources of a community, based on their merit and the perceived value of their contributions. Moreover, it allows for the exchange of tokens for fiat currency, enabling the DC ecosystem to co-exist with market-oriented entities and government institutions.

We argue that Backfeed illustrates a potential application of the blockchain for more open and egalitarian governance. Whereas 'open', with reference to the open-source mindset, is understood as enabling people's capacity to participate on equal footing; and 'egalitarian' means a fair distribution of power, based on merit as perceived in the sense of the greater good. In this view, the sharing economy is a unique opportunity for societies to efficiently allocate their resources, based on social relations of reciprocity and cooperation.

However, in practice there are certainly many limitations for the proposed model. Backfeed is merely a technological solution and even the most sophisticated mathematical model might fail in the face of unexpected events or external dynamics. Bitcoin actually gives a clear example of that. Launched in 2009, it was designed as a perfectly decentralised system, combining distributed network technologies, cryptography and game theory to build a secure peer-to-peer payment system. After 7 years of operations, even though the Bitcoin protocol is theoretically still decentralised, in practice the Bitcoin network is operated by a small number of mining pools, which together control over 75% of the network (Blockchain.info, 2017). Hence, while the model was theoretically viable, it failed to take into account the possibility of external economic and political forces intervening into the system in order to disrupt its decentralised character.

In contrast, Wikipedia illustrates the opposite case. People often fail to comprehend how the particular model of Wikipedia works in theory, yet it does work in practice. The reason is that, although there is no formal economic model that can explain why people contribute to it, a series of social and political dynamics make the system work (Forte & Bruckman, 2005; Khanna, 2012; Wikimedia Foundation, 2011). Hence, regardless of the accuracy of the theoretical model, empirical analysis is always required in order to validate the model.

In the case of Backfeed, it is too early to say whether its model is socially viable or not. The experiment with OuiShare has pointed out the main limitations to the model. Most notably a degree of reluctance has been

identified by certain community members in recording their contributions and in actually defining the scope of these contributions. The Backfeed model also failed to take into account the feelings that emerged when people had to evaluate the contributions of others, or, even worse, to have their contributions evaluated by others.

Most importantly, the OuiShare experiment has shown that many community members were actually afraid that the use of an evaluation system, like the one proposed by Backfeed, would actually reduce many social relations and human interactions into mere transactions in a market-driven economy, whereby every action needs to be registered, assessed, and evaluated by the community. This generated a sense of discomfort amongst a few members of the Ouishare community, who thought that some interactions – especially those related to emotional attachment and care for others – should remain into the realm of social connections, and not be contaminated by any quantitative or qualitative evaluation process.

Furthermore, we do not suggest that Backfeed can alone resolve issues concerning power relations, excessive influence or greed. It could, however, facilitate the types of social productive relations based on cooperation and sharing to scale and support a wider community of people. A technological infrastructure cannot simply code-away the problems that are inherent in human societies. For this a continuous and conscious effort by each member of the society is required to maintain such issues in check and make an economic system viable and sustainable.

These concerns, more than anything, illustrate a more general limitation regarding the blockchain technology. While the applicability of the technology seems relevant to many aspects of human interaction, its implementation at scale is yet to be seen. The technology is indeed pervasive and resilient, nevertheless it still cannot operate outside the sphere of computation. Whether tokens or monetary units, the logic is, to a large extend, still one of quantification. Just as double-entry bookkeeping developed vis-a-vis with the abstracted, rationalised and impersonal logic of the capitalist spirit, both in practice and in economic scholarship, the blockchain could as well be associated with a software-like responsiveness and predictability overwhelming the economic affairs.

Technology can facilitate distributed systems to scale and become viable; however it is the genuine dynamics of sharing that should guide human sociality. To this direction, there is a high duty for an inclusive and interdisciplinary approach, including economics, law, philosophy, along with ICT, so as to avoid getting locked in narrow theoretical and empirical perspectives.

5. Conclusions

The goal of this article was to explore an ongoing transformation in the economy, in response to technological changes. We focused on the role of value systems in relation to a wider logic that determines actions as meaningful within a certain context. The object of study was the sharing economy, and the main research question concerned how value in the sharing economy could be determined, based on the dynamics of social sharing.

We began our theoretical inquiry with a historical account of value in the economic thought. A set of arrangements were identified that established capitalism as a dominant mode of production and determined exchange power as the main expression of value. Afterwards, we examined the context of the information economy, insofar it improves our understanding of the factors that have spawned the sharing economy as a new modality of resource allocation in societies. The transformation of productive relations was examined focusing on the changing conditions of labour and the nature of information. In response, a new modality of production, namely commons-based peer production (CBPP), was identified as the sphere within which a genuine sharing economy could function. Finally, the potential of the blockchain technology was discussed as a medium of value that could crystallise the dynamics of CBPP, as the dominant rationality of a new economic system.

Three interrelated layers associated with value were elaborated to decipher the components that would integrate a new system of value. The first layer, production of value, is related to the dynamics of CBPP and the sharing of use values, with an ecosystem of diverse communities of contributors at the core. For the second layer, we examined the blockchain technology as a medium for value record. We introduced a mechanism for decentralised consensus featured by Backfeed, relying on participatory evaluations and reputation-based influence to determine the value of contributions to CBPP. Finally, a token-based economic model was presented, which tentatively integrates this new system of value, providing the final layer of value actualisation. The tokens issued by collaborative processes represent rewards for the contributions, while they reflect the perceived value of the products and services they produce.

Backfeed thus envisions an ecosystem composed by a variety of value systems that fuel the circulation of commons in a sharing economy. Value becomes perceptible in a way that it shifts away from the logic of utility maximisation, towards the maximisation of benefit for the society.

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