



Cryptocurrencies as market singularities: The strange case of Bitcoin

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ABSTRACT

Since its creation in 2009 the electronic currency Bitcoin has generated volumes of online debate in the business press. While there have been plenty of economic arguments situating it as a financial bubble about to collapse including from Nobel Prize winning economists; its price value has proven to be more durable than many have predicted. To explain this durability, Karpik's conception of market singularities is used to understand the Bitcoin phenomenon by outlining the beliefs that maintain Bitcoin's status as a volatile financial asset. Market singularities are markets for particular kinds of goods and services that are of uncertain and incommensurable value. Singularities markets have communities of followers and a distinctive belief system that ascribes value to a particular product, service, or asset. Developing Karpik's conception, the paper explores the libertarian political belief system that surrounds Bitcoin's status as a financial asset. I also outline some political tensions within the electronic currency community concerning governance and centralization.

KEYWORDS

Bitcoin; libertarianism; Karpik; market singularities; judgment devices; beliefs

The electronic currency Bitcoin that emerged in 2009 created by Satoshi Nakamoto (Nakamoto, 2009) (a name widely believed to be a pseudonym of some description) is undoubtedly the most significant intervention in the field of electronic currency. Despite many notable predictions of its imminent demise, coming from Nobel Prize winning economists (Krugman, 2013a; Shiller, 2014) amongst others, it still exists as a significant entity in the financial landscape. Bitcoin has gained widespread recognition through online media, and despite high volatility it remains a marginal but distinctive financial asset (Moore and Christin, 2013). Here I consider why the price value of this peculiar asset has proven to be more durable than many of the critical predictions have suggested (see for example Williams, 2013).

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3 Karpik's (2010: 10) conception of market singularities can be defined loosely as
4 markets for goods and services, which are of uncertain and incommensurable value.
5 Now this is clearly a broad category but it refers to everyday goods and services, like
6 records or legal services, as well as more exclusive entities, such as works of art or
7 fine wines. Singularities are *distinctive* goods and services that are based around
8 specific kinds of knowledge and judgment (Karpik, 2010: 11). The markets around
9 these goods and services are shaped by communities of followers who believe in these
10 singularities and make a judgment about their worth.
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18 Value is clearly a multifaceted concept and at least two dimensions of value are in
19 play in the following analysis of the Bitcoin market: value established through market
20 price, which is the predominant conception of value within economics; and value
21 understood as a collective ascription of worth (see Burling, 1962; see also Guyer,
22 2004: 84). The two dimensions of value are complimentary since one is more likely to
23 invest in something if you consider it to have worth, but the key argument here is that
24 one cannot understand the reasons for Bitcoin's economic value without examining
25 the non-economic and social elements supporting its value. This latter conception of
26 value can be understood as a social ascription of worth that is centred on knowledge,
27 belief and judgment (Karpik, 2010). As Guyer (2004: 84) notes, this cannot be
28 reduced to price, since price indicators do not provide the criteria with which to judge
29 *how* or *why* something has worth or quality. As Karpik (2010) highlights, judgements
30 of worth must be established through social processes of valuation (see also Caliskan,
31 2004), in which knowledge and belief plays a key role.
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43 Karpik's conception of market singularities can add to the analysis of Bitcoin by
44 highlighting the role of belief systems and judgment in sustaining its price value.
45 While previous cultural economy analysis of price valuation has focused on how
46 prices are made and produced (Caliskan, 2007) and how ascriptions of quality relate
47 to particular markets (Guyer, 2004), Karpik's conceptual toolkit gives us some
48 additional tools to examine the social processes of valuation within particular,
49 distinctive and incommensurable, goods and services markets. His analysis also
50 highlights the role of belief which is particularly important in the Bitcoin market.
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3 In this context, beliefs are understood as viewpoints. While belief systems refer to
4 established and interconnected sets of viewpoints and practices. These belief systems
5 can also be named and characterised as ideological and in doing so one situates them
6 as political. The political denotes points of conflict or disagreement, which can occur
7 around and *within* singularities markets. Broadly speaking, a political belief is a view
8 about how the social world *should* operate that is in conflict with others.
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15 To a certain extent all markets are underpinned by belief systems, including financial
16 investments. But these belief systems are more pronounced in some markets than
17 others. Conventional economic analysis tends to focus on information and calculation
18 as determinants of price value rather than beliefs. Indeed, economists have often
19 dismissed Bitcoin on the basis that it has no underlying real value (see for example
20 Cheah and Fry, 2015) since it is not supported by the state or any legal authority
21 unlike national fiat currency. In contrast to this, Karpik (2011) draws out the
22 importance of judgment and particular kinds of knowledge which give life to and
23 sustain particular markets through socially ascribing worth. Given that Bitcoin is by
24 far the most widely recognised cryptocurrency, it is the principal focus of the analysis
25 that follows. However, in the final section of the paper in order to highlight the
26 political tensions *within* cryptocurrency markets I will broaden the analysis to other
27 cryptocurrency communities.
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38 Not a physical entity as such, Bitcoin works through an expanding record of
39 transactions, all of these transactions are readable and the history of previous
40 transactions validates future transactions (Böhme et al., 2015: 215). Thus one of the
41 key advantages that Bitcoin is meant to have over government fiat currencies is that
42 because Bitcoin works through cryptography and peer2peer transactions there is no
43 central authority either issuing the currency or regulating it. Instead, Bitcoin are
44 bundled into blocks, blocks are generated through a computer mining process to
45 discover a hash code, which when discovered releases the next block of Bitcoin. A
46 key claim in this paper is that the durability of Bitcoin's price value is sustained by
47 the belief system of the community that surround it. Drawing on Karpik's (2010)
48 conception of market singularities, I situate Bitcoin as a peculiar *ideological* market
49 singularity, which is characterised by a libertarian belief system.
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3 The contributions of the paper are that I develop a fresh understanding of the Bitcoin
4 market by applying Karpik's framework to cryptocurrency, and I develop his analysis
5 by highlighting the importance of the *political beliefs* surrounding Bitcoin. While
6 libertarianism underpins the Bitcoin ecosystem, to be a member of the Bitcoin market
7 one does not have to be a libertarian, since some own Bitcoin out of curiosity or
8 because of an interest in computer programming and cryptography. However, the
9 principal libertarian political belief underpinning Bitcoin is the view that a currency
10 that works through blockchain cryptography, which is not controlled by any state or
11 central authority, is both sustainable and desirable.
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20 I begin by outlining more conventional economic perspectives on Bitcoin and
21 highlight a crucial missing ingredient in these accounts, which is the belief systems
22 that maintain its price value. In the second section, I outline the concept of market
23 singularities and the tools it offers for further empirical analysis of the Bitcoin market.
24 Here the analysis is focused around judgment and judgment devices. After this, the
25 libertarian belief system around Bitcoin is examined. In the final section I point to
26 some of the political tensions within Bitcoin and other cryptocurrency communities
27 concerning both centralization and governance.
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35 **Economist Perspectives on Bitcoin**

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38 Most academic articles on Bitcoin have focused on the technical concerns of
39 computer programmers and cryptographers, including the degree of anonymity of the
40 currency and technical glitches and hacking dangers (see for example Moore and
41 Christen, 2013). Several other papers and government documents have examined the
42 ambiguous legal status of the currency (see for example FinCEN, 2013).
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48 Bitcoin has been an exploratory subject across a range of disparate fields, including
49 computer science (Grinberg, 2011), social media studies (Garcia, et al., 2014), social
50 network analysis (Meiklejohn, 2013), money laundering (Aldridge and Décary-Héту,
51 2014), economics (Cheah and Fry, 2015), political economy (Weber, 2016), and in
52 philosophical discussions about the nature of money (Maurer et al., 2013). This paper
53 approaches Bitcoin and electronic currency from a different angle, which is a cultural
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3 economy perspective focused on an investigation into *why* Bitcoin continues to have
4 price value, and the importance of the political beliefs that underpinning it.
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8 The most prominent group of Bitcoin critics have been academics working in finance
9 and economists. Economic critiques have been put forward principally via social
10 media; in contrast, academic economic analyses of Bitcoin and electronic currency
11 are relatively scarce (Cheah and Fry, 2015: 35). The economic scepticism around
12 Bitcoin is neatly summarised by Williams (2013) who argues that 'Bitcoin is not a
13 legitimate currency but simply a risky virtual commodity bet' with a flawed DNA.
14 These critiques of Bitcoin have been based around the following objections, often
15 with some combination of all three: First, any viable currency requires banking and a
16 central authority and because Bitcoin does not have this it is unsafe and prone to fraud
17 (Williams, 2013). A classic example of this problem was evident during the collapse
18 of what was the largest Bitcoin exchange, Mt. Gox, in February 2014 amidst
19 allegations of corruption (see Greenberg, 2014). Second, Bitcoin is far too volatile to
20 operate as a unit of account and therefore it will never be a sustainable and widely
21 used currency (Ali, 2014). Third, there is no secure basis for Bitcoin's price and it is
22 simply a speculative bubble with a Ponzi character (see for example Cheah and Fry,
23 2015). In this kind of economic analysis, value is understood purely through price
24 (see Burling, 1962). The third economic argument centres on the point that, unlike
25 Bitcoin, national fiat currency is backed by the state and this underlies its value. As
26 Krugman (2013b) neatly puts it, 'fiat currency is backed by men with guns whereas
27 Bitcoin is not, so why should this thing have any value?'

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29 Some of these critiques have proven to be overstated, particularly Williams's claim
30 that one Bitcoin will be valued at \$10 by mid 2014 (Williams, 2013) - the value of
31 one Bitcoin was \$319.70 at the close of 2014 (Coin Desk, 2016). Williams's bold and
32 ultimately incorrect prediction has become an infamous one in the Bitcoin
33 community, but it is a useful one for our purposes here because Williams is specifying
34 a point at which, at least for some economic critics, the Bitcoin bubble will be deemed
35 to have burst and it will no longer have significant value. The paper is intended to
36 provide at least a partial explanation for why the price value of a Bitcoin has not
37 collapsed and continues to be substantially higher than \$10.
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3 However, the problems surrounding Bitcoin's widespread adoption as a currency - its
4 volatility and the technological sophistication required to use it - do tend to push it
5 towards the status of a financial asset more than a currency (see Burniske and White,
6 2016). This is reflected in the extent to which Bitcoins are stored, or rather hoarded,
7 and not circulating. There are differing estimates of the proportion of Bitcoins that are
8 not circulating, but in a widely cited paper Meiklejohn et al. (2013) put the figure at
9 64%, and a Bank of England quarterly bulletin notes that a popular online site where
10 people can hold their Bitcoin, known as 'My Wallet', had 0.02 transactions per day in
11 2014 (Alli, 2014: 5). This suggests that Bitcoin have a tendency to be held as a
12 speculative store of value, rather than a currency that is used for the exchange of
13 goods and services even though it continues to be used by a minority for this purpose
14 (Alli, 2014).

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25 The history of Bitcoin price has been marked by extreme volatility driven by various
26 crises at different points. These crises events have been triggered by a variety of
27 concerns about the currency, such as regulatory curbs of Bitcoin activity – for
28 example the Peoples Bank of China's issued a note in December 2013 which banned
29 financial companies from undertaking Bitcoin transactions (Bloomberg, 2013). Yet
30 the most serious crises have been sparked by problems internal to the Bitcoin
31 community, for example the largest Bitcoin exchange – sites where people buy and
32 sell Bitcoin – Mt. Gox collapsed in February 2014 (Greenberg, 2014).

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Dramatic drops in Bitcoin exchange value in short time periods have led a range of
online commentators to declare the end of Bitcoin on more than one occasion (see for
example Financial Times, 2014; Hearn, 2016). The history of Bitcoin price is
characterised by rapid rises and sharp depreciations, which have then been followed
by a degree of Bitcoin price recovery (Coin Desk, 2016); illustrating that its price
value is far more durable than many, such as Williams (2013), have assumed. From
its creation in 2009, Bitcoin was intended to work as an alternative cash payment
system that cuts out the need for any central authority through cryptographic
innovation (Nakamoto, 2009). Yet there is a tendency to hoard the currency as a
speculative asset rather than spend it, at least for a large proportion of Bitcoin owners.
Given the many predictions of its immanent demise, how do we explain the
continuing market value of Bitcoin? To address this, we need to engage with the

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3 belief systems that surround Bitcoin, in order to better understand the characteristics
4 of this peculiar market asset.
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7 8 **Virtual Currency and Market Singularities** 9

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11 Market singularities are goods and services whose value is multidimensional,
12 uncertain and incommensurable (Karpik, 2010: 16). This incommensurability means
13 that these goods cannot be reduced to an objective determination of price according to
14 a *single* set of criteria or information. Karpik gives several illustrative examples of
15 singularities markets, including French wines, records, contemporary painters, and
16 French legal services. These examples are illustrative rather than empirically drawn
17 out in depth, and without detailed exploration of the beliefs and judgments that give
18 these markets life (see Healy, 2011). This lack of detail leaves the conceptual
19 framework rather broad and open to interpretation.
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28 One question that arises, when trying to understand what a market singularity is, is the
29 counterfactual: what is not a singularities market? The difference here is one of
30 degree rather than of kind, since any market is likely to have products or entities
31 within it that are distinctive and singular. For example, when purchasing eggs one
32 might choose to buy eggs that have come from a particular collection of chickens that
33 are distinctively reared. Though there are strong trends in many markets that push
34 towards standardisation and homogeneousness, such as the purchase and consumption
35 of basic UK supermarket dairy produce. Here standardisation and informational
36 concerns like price and quantity are pervasive in purchasing decisions, and therefore
37 basic supermarket dairy produce would be a market where the dominant trends are not
38 those of singularity and distinctiveness. Karpik gives the example of the
39 standardisation and impoverishment of classical music in which mass production and
40 homogeneity have lessened personal judgment and interpretation within the market
41 (Karpik, 2010: 251-252).
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53 Karpik's (2010: 51) conceptual schema is focused around the *socially* constructed
54 dimensions of valuation of distinctive goods and services. Karpik's conception of
55 value takes us beyond the reduction of value to price, to a broader conception of value
56 that encompasses the social ascription of worth (see also Guyer, 2004). This is
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3 contrary to the efficient markets hypothesis in economics, which is based on the idea
4 that value is determined through market price and reflects the efficient processing of
5 information.
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10 The difficulty that the efficient markets hypothesis has with market singularities is
11 neatly reflected in the American economist Baumol's (1987) characterisation of art
12 markets as a 'floating crap game'. As entities of 'unnatural value', Baumol argues that
13 works of art do not have any equilibrium price level, and unlike the market for steel
14 bolts fails to conform to economic laws of supply and demand. The economic
15 reduction of price to supply and demand is equally unsuitable for the Bitcoin market
16 because this obscures the crucial social judgments and questions that surround
17 Bitcoin's price valuation, such as *why* should Bitcoin have any value? (see Krugman,
18 2013b). And how does one judge the 'correct' price of a Bitcoin when there are
19 conflicting and polarised views about its worth? (see also Caliskan, 2007: 257; Guyer,
20 2004: 93). Baumol's difficulty in categorising art markets stems from the fact that,
21 like other market singularities, value in art markets is not strictly quantifiable and not
22 reducible to the 'neutral' processing of information; since socially constructed
23 knowledge, beliefs and viewpoints are crucial to the valuation of singularities.
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35 Central to the existence of singularities markets is the classifications of people sharing
36 broadly the 'same point of view' (Karpik, 2010: 31). In singularities markets
37 judgment shapes purchasing decisions and judgment has a public, communicative
38 quality (Karpik, 2010: 38). In this sense the two dimensions of value pointed to here,
39 value as price and value as the ascription of worth (Guyer, 2004: 84), are
40 interconnected and complimentary. In purchasing a cryptocurrency one is publically
41 *ascribing worth* to a cryptographic network, which entails making a supporting
42 judgment about its price.
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50 This act of judgment and ascribing value through purchasing requires networks and
51 market devices to function, what Karpik (2010) refers to as 'judgment devices'.
52 Judgment devices are a broad ranging category that includes collective networks and
53 expertise (Karpik, 2010: 49). Judgment devices 'dissipate the opacity of the market'
54 and reduce the cognitive deficit by providing knowledge and expertise which serves
55 as a guidepost for action (Karpik, 2010: 44-45). As Guyer (2004: 90) notes,
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3 'judgments can only work to structure pricing if expertise is brought to bear on the
4 problem'. Twitter is an interesting example of a judgment device in the Bitcoin
5 market, which can be classified as a 'ciceron' (Karpik, 2010: 45; Healy, 2011) – a
6 judgment device that provides an arena for critics and commentators to comment on,
7 and attempt to direct, the market.
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13 Twitter works differently from more established news media, such as television,
14 because those with Twitter accounts tend to follow individuals with similar belief
15 systems (Halberstam and Knight, 2014). So it serves as a particularly important
16 judgment device in reinforcing ideological belief systems amongst particular
17 communities of Tweeters. Garcia et al. (2014) find that spikes in Tweets about
18 Bitcoin correspond closely to price hikes in Bitcoin and increasing usage. Although
19 this relation seems to be more one of correlation than causation, Kaminski and Gloor
20 (2016) for example find that Twitter signals do not predict Bitcoin price rises but high
21 trading volumes do correspond to emotions flying high on Twitter. As they suggest,
22 Twitter is a 'virtual trading floor that emotionally reflects Bitcoin market movement'
23 (Kaminski and Gloor, 2016: 13). Thus Twitter works as an important judgment device
24 in which actors reflect, and try to read, movements in the Bitcoin market.
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35 This application of Karpik's work into the field of cryptocurrency moves us in a
36 slightly different direction from other analyses of market singularities. In an
37 interesting analysis of invitro-fertilisation and egg markets Waldby suggests that the
38 market for singularities consists of 'goods that, for the consumer, have no quantifiable
39 equivalence or tradable value' (Waldby, 2015: 280). While this characterisation does
40 seem to apply to frozen eggs, which have a particularity, and a unique form that is
41 intended to give life that takes precedence over 'tradable value', this does not seem to
42 apply to other market singularities.
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50 Clearly in some singularities markets tradable value and appreciation plays a larger
51 role than others. Singularities markets are often characterised by investor speculation.
52 To take one example, consider the substantial holdings of valuable works of art, like
53 great Picassos in free ports such as Singapore, which can then be easily exchanged. A
54 singularities market has developed around great art in which famous pieces become
55 tradable devices for investors to store capital (Knight, 2016). The market for
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singularities can never be fully separated from quantifiable equivalence and tradable value. Since in the moment of decision when purchasing a singularity one is necessarily entering the realm of calculation. Karpik (2010: 118) expresses this as follows, ‘decision belongs to a world grounded in generalized equivalence whose actors are guided by a single criterion of action, while judgment belongs to a world... characterised by a plurality of evaluation criteria’. And both calculation and judgment are integral to the decision to purchase a singularity. For some actors entering a given singularities market, profiting from price appreciation is likely to be the predominant motive. The tradable values in singularities markets are speculative and uncertain (see Karpik, 2010: 11), since they depend on the extent to which certain kinds of knowledge and particular viewpoints are adopted and followed.

There is a strange hybrid character to markets for singularities because the items in question are not reducible to any simple calculation of price, yet some investors join the market for a projected appreciation of ‘tradable value’ and do not necessarily share in the belief system that gives the entity its worth as a valued singularity. This motivation for investing in Bitcoin is reflected by Michael Novogratz, the co-chief investment officer of Fortress Management Group, who explains his companies’ interest in Bitcoin thus, ‘there are enough libertarian (anti) government guys to at least make this a bubble’ (Foley, 2013). Alongside the important shared belief systems that characterise singularities markets, there are also those who join these markets because of *their perception* of investor behaviour, deduced from a judgment about the beliefs of other market members.

While judgment devices are central to processes of price formation, singularities markets must also possess some more formalised aspects in how goods are purchased and exchanged. When emphasising the elements of judgment and knowledge, Karpik gives little detail about how singularities markets are actually *enacted* and here particular sites where exchanges happen are important (see Caliskan, 2007). Sites or places of exchange are strangely absent from Karpik’s account but he does recognise the interpenetration between judgment devices and the act of exchange (Karpik, 2010: 105). However, the concrete site of exchange has its own rules and norms, which he rather neglects. If one takes a singularities market such as antique furniture, the role

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3 of the auction house or websites like eBay are an important component of these
4 markets.
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8 As the concrete sites of exchange that give the market life, Bitcoin exchanges are
9 crucial. Bitcoin are acquired mainly through exchanges but these exchanges are not
10 legally regulated in the way in which the exchange of government backed fiat
11 currencies is, since Bitcoin is not generally considered as legal tender. This makes
12 feedback and trust crucial to the operation of exchanges. Karpik (2010: 66) argues
13 that trust is essential to the maintenance of singularities markets. Trust is a broad and
14 rather ambiguous category in Karpik's analysis, which has a foundational status
15 connected to knowledge and belief (Karpik, 2010: 60). Trust is important to Bitcoin
16 exchanges because in the absence of the state, one must believe that the exchange site
17 one is undertaking transactions on (and/or storing Bitcoin) will continue to exist, be
18 secure, and not defraud the user. Maurer et al. (2013: 274) describe the networks of
19 trust around Bitcoin as a 'sociality of trust', while Karpik (2010: 65) refers to it as
20 'relational trust'. Thus the role of user feedback and judgment devices in establishing
21 the reliability and trustworthiness of exchanges becomes central. The importance of
22 trust in the Bitcoin market again highlights the inherently social dimension of
23 singularities markets. And given the uncertainties around price valuation, this
24 sociality is underpinned by beliefs.
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38 **The Bitcoin Community and Libertarianism**

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41 Shared beliefs are crucial to the existence of market singularities. As Karpik (2010:
42 61-62) describes, 'to believe is to inhabit a quasi world richer than the real world, a
43 quasi world protected from the world'. In a revealing 2010 quote from Nakamoto on a
44 Bitcoin discussion forum, the electronic currency is characterised as follows, 'I think
45 the most apt description of Bitcoins is that they are shares of stock in this *communal*
46 Bitcoin enterprise we are undertaking' (Nakamoto, 2014: 283, my italics). The notion
47 of Bitcoin as a communal enterprise highlights the shared belief system, a shared act
48 of faith in blockchain cryptography.
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56 While Karpik (2010) places considerable emphasis on shared beliefs as a defining
57 feature of singularities markets, and emphasizes the role of shared 'points of view',
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3 the political dimensions of this receive little attention. Yet the implications of this are
4 clearly political, since ‘each viewpoint carries its own criteria of evaluation, which
5 express a principle for organizing the world’ (Karpik, 2010: 40). Indeed, because
6 money is inescapably political, in that monetary choices entail contests that result in
7 decisions that favour some actors over others within a given society (Kirshner, 2010:
8 646-647), Bitcoin’s status as a trailblazer in the field of electronic currency - the first
9 and most recognised of its kind - means that it is a market singularity with an
10 important ideological and political dimension. And the key political belief
11 underpinning Bitcoin is a broad libertarian conviction that an alternative money
12 system based on cryptography, which is beyond the control of the state, is both
13 sustainable and desirable.
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23 The currency has some natural affinities with the key economic ideas of the Austrian
24 School, such as the ultimate subjectivity of value, an anti-inflationary standpoint and
25 a deep distrust of state intervention. As von Mises (2012: 29) notes, ‘it is not the state
26 but the common practice of all those who have dealings in the market, that creates
27 money’. The idea that the fundamental feature of how money works is not legal
28 tender and state authority, but rather the subjective ascription of value is central to
29 Austrian School thought and chimes with the beliefs of the Bitcoin community.
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36 The subjective conception of value is perhaps most clearly expressed by Carl Menger.
37 Menger argues against the idea that value is inherent in things; for him valuation ‘is a
38 judgment economizing men make about the importance of the goods at their disposal’
39 (Menger, 2007: 121). Judgments of value involve the subjective ordering of needs and
40 wants for Menger (2007: 194), and – as is customary in economic theory - value is
41 understood ultimately through price. Menger’s arguments for the subjective origins of
42 value are central to economic libertarian thought and are complimentary with the idea
43 that Bitcoin has a sustainable price value; an assumption that other economists have
44 questioned (see for example Cheah and Fry, 2015). His *subjective* account of value
45 has certain similarities but also important differences from Karpik’s (2010)
46 conception of market singularities. Value is not inherent for either Karpik or Menger,
47 but in Menger’s account the process of ascribing value begins from the subjective,
48 while for Karpik (2010) the starting point of the analysis is quite different. Karpik’s
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3 principal interest is in the *social* devices and networks that give market singularities
4 life.
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8 Hayek's (1976) arguments for the denationalisation of money also echo the aims of
9 sections of the Bitcoin community (ECB, 2012: 22). Hayek's call for an open
10 competition between different forms of currency that are not regulated by the state –
11 essentially a free trade in money and monetary systems - arises from a fundamental
12 distrust of government regulation of the money supply and a faith in the open
13 expression of self-interest through market competition (Hayek, 1976: 130-131). As
14 Hayek sees it, this competition would occur between money systems that can be
15 created by private institutions and individuals who are free to compete with existing
16 state backed fiat currency. Bitcoin is intended to deliver on both these counts: in being
17 released through a mining process at a set rate its issuance is not controlled by a
18 central authority or government; second, because its growth and usage is dependent
19 purely on people choosing to use the currency rather than the requirements of any
20 state authority.
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31 Although I have characterised Bitcoin as assuming more of an asset like status, it
32 should be noted that Bitcoin can also be held as an asset because it projects a
33 libertarian *viewpoint* about how the money system could or should be (see Dodd,
34 2012), even if it does not currently serve as money for the majority of users. The
35 development of Bitcoin soon after the financial crisis was partly a *reaction* to
36 concerns about the government backed fiat currency system, which it was trying to
37 present some kind of alternative to. As Nakamoto (2009) notes, 'banks must be
38 trusted to hold our money and transfer it electronically, but they lend it out in waves
39 of credit bubbles with barely a fraction in reserve'.
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48 Golumbia (2015; 2016) draws out the key libertarian political beliefs surrounding
49 Bitcoin, characterising it as an 'extreme rightist-anarcho-capitalist, winner-take-all...
50 political vision' (see also Scott, 2014). This anti-state ideology gives rise to a range of
51 problems and inconsistencies, for example he highlights an interesting tension in
52 Bitcoins' anti-government libertarian ethos between Bitcoin advocates who celebrate
53 its growing acceptance among banks and established financial players; and other
54 members of the community who are convinced of Bitcoin's status as an alternative
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3 financial asset that breaks with the existing economic order. The former development
4 is clearly inconsistent with the latter claim.
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8 While many aspects of Golumbia's characterisation of the Bitcoin community ring
9 true, the approach presented here has two principal differences from his account:
10 First, Golumbia seems to have little interest in the question which guides this analysis,
11 which is why has Bitcoin's price value proven to be more durable than many
12 economists have predicted? I argue that Karpik (2010) helps us to explain at least
13 some of the reasons for this and that existing economic critiques miss a crucial
14 ingredient of Bitcoin's price valuation, which is the beliefs of the Bitcoin community.
15 Second, Golumbia's project is focused on establishing Bitcoin's connections to right
16 wing economic libertarianism, but this rather neglects the diversity of the Bitcoin
17 community and the differences between libertarian perspectives, such as between
18 cypherpunks and economic libertarians. Cypherpunks are more interested in social
19 freedoms and have concerns about state monitoring and privacy (for an early
20 founding statement of the cypherpunk ethos and how it relates to cryptography see
21 Hamill, 1987). While economic libertarians place a greater emphasis on economic
22 freedom and an anti-tax, anti-regulatory agenda; the objectives of the cypherpunks are
23 centred on enabling privacy through cryptography. While the two do overlap in the
24 Bitcoin case they can also be distinguished. Thus Golumbia tends to overlook
25 political differences *within* the Bitcoin community.
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39 This brings us to another dimension of Bitcoin's economic value, which is the
40 existence of darknet markets, the most famous of which was Silk Road. Silk Road
41 became a high profile website for the purchase of illegal drugs and other nefarious
42 activities from its creation in 2011 to its shutdown and the seizure of the Bitcoin held
43 on the website by the FBI in 2013. Bitcoin has served as the principal currency with
44 which to purchase illicit substances online, largely because of the partial anonymity it
45 provides (see Meiklejohn et al., 2013).
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52 While the purchase of online illegal drugs provides perhaps a more concrete reference
53 point for Bitcoin's price valuation than libertarian beliefs, the fact that Bitcoin enables
54 trades on darknet markets is very much consistent with the libertarian, cypherpunk,
55 anti-government regulation ethos of parts of the Bitcoin community. Although here
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3 the libertarianism is arguably more social than economic – the concern is less with the
4 perceived threat posed by central banking, and instead the objective is to give people
5 the social freedom to purchase illicit substances online free from the threat of
6 prosecution. The purchase of illicit substances on the darknet market then adds
7 another dimension to the libertarian ideology that helps to sustain Bitcoin’s economic
8 value.
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14 Within the Bitcoin community people believe for different reasons, there are believers
15 who are more interested in its status as a speculative libertarian financial asset and
16 store Bitcoin in the hope that its price value will appreciate; and others of a more
17 socially libertarian persuasion who see it as a means to undertake economic
18 transactions with a greater degree of freedom from state control. While some of the
19 viewpoints within the Bitcoin community are more explicitly politically libertarian
20 than others, they all must share a political belief that it is beneficial or desirable to
21 have a cryptographic currency/asset that operates independently of national
22 governments and central banks.
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30 31 **Bitcoin Centralization and Governance** 32

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35 Bitcoin has been characterised as a market singularity underpinned by libertarian
36 political beliefs. In this final part of the paper I draw out some tensions in Bitcoin and
37 other cryptocurrency communities around market centralization and governance.
38 These two issues are often linked, since as we shall see, the debates about whether
39 Bitcoin needs improved governance connect to problems of centralization and
40 ownership concentration. While it is often claimed that Bitcoin is a decentralized
41 peer2peer network, recent challenges in the field of cryptocurrency have brought to
42 the fore operational issues that render this proposition more questionable.
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50 Wilde (2013) reports that 927 people own half of the Bitcoins in circulation, which is
51 clearly a highly a heavily concentrated level of ownership. This runs contrary to the
52 idea that Bitcoin is decentralized, since while the peer2peer network is based on
53 ideals of decentralization, ‘significant economic forces push towards de facto
54 centralization’ (Böhme et al., 2015: 219-220), including ownership concentration
55 amongst a small number of wealthy investors. One of the problems with this
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3 concentration of ownership is that it means that single large transactions can have
4 major effects on value – for example Bovaird (2016) reports that a drop of 5% in
5 Bitcoin price in half-an-hour on 11 September 2016 is likely to have been caused by a
6 single trade. The danger with this high level of ownership concentration is that it can
7 lead to a relatively illiquid market, which works against Bitcoin becoming an
8 alternative money system that is widely used for everyday transactions.
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15 One further centralization in the Bitcoin market concerns mining capacity, which
16 illustrates how dominant parties can exert major political influence on how markets
17 operate. Miners expend large amounts of electricity and increasing levels of computer
18 power to discover hash codes that lead to the release of the next block of transactions
19 for which they receive a Bitcoin payment as a reward. Because of the ever increasing
20 computer power mining requires it has become the province of a small number of
21 institutions with sufficient capacity. Around 70% of Bitcoin mining in June 2016 was
22 carried out by a collection of four Chinese mining institutions (Popper, 2016).
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30 The blockchain has been beset by political disagreements in recent years, because of
31 the increasing amount of time it takes to process transactions due to a 1MB cap on
32 block size. A division emerged between those known as Bitcoin Core, which wants to
33 continue to work with the existing model without fundamentally changing the block
34 size, and Bitcoin Classic who are seeking to increase the block size (see Ennis, 2016).
35 Miners have a crucial position in the Bitcoin ecosystem since the software they
36 choose to run to mine Bitcoin become the software that is used throughout the
37 network, which gives them sizeable decision making power (Popper, 2016). Bitcoin
38 does not have any central authority to resolve these competing conceptions of the
39 blockchain, which means that miners have a major role in deciding the software
40 model that is adopted. The four major mining institutions in China have effectively
41 used their considerable power to prevent any proposed increase in block size from
42 getting off the ground (Hearn, 2016; Popper, 2016). Centralized mining power means
43 that a handful of institutions have substantial decision making power over how the
44 blockchain operates. The existence of heavily concentrated mining capacity translates
45 into sizeable political power for select groups, which illustrates how concentrations of
46 economic power can lead to concentrations of political power in cryptocurrency
47 markets.
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Another tension around governance and the blockchain is reflected in other adaptations of the Bitcoin protocol. As an ideological market singularity Bitcoin shows that cryptography can open up a range of different political possibilities in currency design (DuPont, 2014; see also Terranova and Fumagalli, 2015). Because Bitcoin works according to ‘predetermined rules encoded in an open source software platform’ (Weber, 2015: 139), an adaption of these rules could potentially create platforms for different ideologies. Although a proviso is in order here, since as Minsky (1986: 228) notes, ‘everyone can create money; the problem is to get it accepted’ and other electronic currencies have far lower capitalisation, acceptance and recognition than Bitcoin does. Having said this, a whole range of other cryptocurrency experiments have developed in recent years which embody slightly different principles in their peer2peer blockchain design, such as Namecoin, Dogecoin, Zcash and numerous others. One interesting case, of this - which brings to the fore questions around the governance of the blockchain - is Ethereum.

Ethereum’s unit of account is Ether, which is intended to facilitate decentralized applications of the blockchain protocol through smart contracts. One application known as the Decentralised Autonomous Organisation (DAO) provided a means to govern investment capital without any central authority. However, due to a transaction vulnerability in the code, the DAO which had received around \$1 million in Ether could be moved into another DAO which one exploiter then had total voting power over (Lackness, 2016), enabling them to seize the invested Ether. This left a number of Ethereum investors in the DAO unhappy, because they had lost their Ether investments due to this vulnerability and demanded to be reimbursed. In response to this pressure, the developers created a hard fork in the blockchain in which on one side the exploiter received the Ether and on the other the Ether was returned to investors. The creation of this hard fork to reimburse investors prompted a polarised reaction in the electronic currency community with some critics like the Ethereum developer Felföldi (2016) arguing that the ‘money is the rightful property of the “thief”’. Felföldi (2016) proposes that there should be no recourse to an abstract ‘higher justice’ that takes precedence over the ‘immutable law of code’.

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3 This division and the resulting hard fork within the Ethereum blockchain illustrates
4 how cryptocurrency communities can be divided by competing political ideals. For
5 some participants' faith in the code as a 'just' system takes precedence over abstract
6 normative concerns about 'justice' and fairness; while for others providing financial
7 redress to victims of 'fraud' took precedence. The absence of any legal authority
8 meant that the developers had to make a decision to resolve the dispute, and decided
9 to fork the blockchain to respect 'honest' market investors against such hacks and
10 reimburse the Ether that was lost. Thus as a politicised market singularity Bitcoin and
11 cryptocurrencies can have fundamental political divisions that on occasion come to
12 the fore in the absence of any central authority.

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21 Cryptocurrencies then present an interesting case of political tensions around beliefs
22 within singularities markets – particularly because they operate to a large extent
23 beyond the province of the state (Karpik, 2010: 56). Questions of governance can
24 become significant points of division in singularities markets and this political
25 dimension is given little attention in Karpik's analysis. The Bitcoin market, in
26 presenting an ideal of what an alternative monetary system might look like, is
27 inevitably political. And this is also a key reason why, despite internal political
28 divisions, its economic value has proven to be a great deal more durable than many
29 sceptical commentators have predicted.

30 31 32 33 34 35 36 37 38 **Conclusion**

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41 Bitcoin has assumed the status of a peculiar speculative asset (Burniske and White,
42 2016), one that also - although to a lesser degree - serves as a currency with which to
43 purchase particular goods and services. Bitcoin retains a community of followers and
44 has prompted numerous discussions in web forums around its status as an asset and its
45 design.

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51 There is an important ingredient missing from existing accounts of Bitcoin, which is
52 addressed by focusing on how the Bitcoin market operates, and situating the politics
53 surrounding it. Drawing on and developing Karpik's (2010) conception of market
54 singularities has helped us to engage with the belief systems and judgment devices
55 that underpin this speculative asset. Conventional economic readings that have
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3 understood Bitcoin purely as a speculative bubble (Krugman, 2013a) follow the
4 problematic tendency that Galbraith (2001: 79) notes, which is for economists to
5 understand motivation in purely economic terms. In singularities markets there are
6 other important sources of motivation at work, including political conviction.
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11 Furthermore, the brief discussion of the Ethereum smart contract experiment suggests
12 that there is considerable scope for further case study analysis of the belief systems
13 underpinning different cryptocurrencies. Drawing on Karpik's (2010) framework, this
14 paper provides an illustration of how the concept of market singularities might be
15 fruitfully applied to different cryptocurrencies in the future, to examine the
16 similarities and differences between them.
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23 While Karpik (2010) draws attention to the importance of beliefs in singularities
24 markets, in the case of cryptocurrency we have seen that belief systems can also
25 contain significant political differences within them. Indeed, the political divisions
26 *within* singularities markets have thus far been a neglected area of investigation. The
27 analysis of Bitcoin as a market singularity has also highlighted how the design and
28 issuance of any monetary system is essentially political.
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