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The (A)Political Economy of Bitcoin

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Abstract: The still raging financial crisis of 2007–2008 has enabled the emergence of several alternative practices concerning the production, circulation, and use of money. This essay explores the political economy of the Bitcoin ecosystem. Specifically, we examine the context in which this digital currency is emerging as well as its nature, dynamics, advantages, and disadvantages. We conclude that Bitcoin, a truly interesting experiment, exemplifies "distributed capitalism" and should be mostly seen as a technological innovation. Rather than providing pragmatic answers and solutions to the current views on the financial crisis, Bitcoin provides some useful and timely questions about the principles and bases of the dominant political economy.

Keywords: Digital Currencies, Cryptocurrency, Commons, Bitcoin, Money, Open Source, P2P Money, Distributed Capitalism

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The rupture between the real and the paper economy gave rise to the 2007–2008 financial crisis and has arguably created huge debts (Perez 2009) that governments, businesses, and households cannot hope to repay. Instead of striving to create money based on the logic of debt, some claim that authorities should focus on financing the productive sectors of the economy instead of the speculative financial ones (Keen 2011; Galbraith 2012; Hudson 2012a, 2012b; Greco 2009). The discussion around the shortcomings of the tools and mechanisms of the financial system has brought to surface several alternative and complementary practices both in local and global scale.

Designed by Michael Lindon in 1982, local energy transfer systems (LETS) have been established in several countries around the globe, like Canada, Argentina, and Australia, as well as recession-stricken countries like Greece to provide liquidity for local economies. More recently, time banks that use time units as a currency are appearing in both developed and developing countries as a way of building social capital (Cahn 2000). With the wide use of information and communication technology (ICT), digital currencies have also emerged. The former appear to present yet another alternative approach to the dominant financial infrastructure of the system. Bitcoin is the most widely used, distributed, encrypted, partly anonymous digital currency, and has gathered increasing attention by academics and the press.

This Reflection explores the political economy of the Bitcoin ecosystem. Specifically, we examine the context within which Bitcoin is emerging, as well as its nature, dynamics, advantages, and disadvantages. We then attempt to provide some insight concerning the importance if viable digital currencies.

1. The Evolution of Currency

Money in various forms, from bartering to modern financial tools, has been an important institution for organized societies from the earliest times. History provides examples with many alternatives of the role of money that offer insights on today's economic issues. Assigning monetary value in objects, like coins, is a part of the evolutionary process of humans (Lewis 2001; Kinley 2003). Trusting each other in transactions as well as the establishment of an authority that issues these objects is an evolved psychological condition (Kinley 2003).

Mainstream economics consider barter inefficient as a method of transaction, thus explaining the emergence of money (Humphrey 1985). However, some researchers like David Graeber (2001, 2011) and Lietaer and Dunne (2013) have shown that, apart from some specific cases, barter economies were never the norm. In the first agrarian societies humans used elaborate credit systems and gift economies, whereas bartering took place with foreigners. Money as a measuring unit emerged with the need for a quantifiable concept of how much was owed after a "gift" was offered. Thus, money first existed as credit and later acquired the functions as a medium of exchange and value storage.

Historical data from several cultures indicate that differing definitions of debt lead to varying credit systems and subsequent forms and uses of money (Graeber 2011). In other words, money was first introduced as a unit to measure debt and then received more functions. After the gold standard was abandoned in 1971, money became more credit-oriented to facilitate the growing rate of the capitalist system (Graber 2011; Greco 2009; Lietaer 2001; Lietaer and Dunne 2013; Perez 2002). ICT enabled the financial system to create more credit tools to cover the ever-rising demand for credit (Perez 2009). These tools may have offered more financial liquidity but ultimately led to the financial crisis of 2008.

A growing number of economists (see Keen 2011; Galbraith 2012; Hudson 2012b; Greco 2009; Lietaer 2001; Lietaer and Dunne 2013; Perez 2009; Reinert and Daastøl 2011) is concerned about the widening gap between the real economy and its financial counterpart, noting that new bank products may create value that translates into money but not necessarily real production value as well. Some, like Greco (2009), criticize the way money is used today as a credit tool, claiming that in a world with finite resources; unlimited financial expansion is an illusion. According to Graeber (2011), the incorporation of debt into the planning and distribution of money, what Lietaer (2001) calls the "central information system" of society, deteriorates human relationships by creating unsustainable structures on multiple levels (environmental, ethical, etc). Further, Lietaer (2001) notes that money tends to accumulate, a legacy of the first phase of industrial capitalism and, therefore, must be attuned to the information age and its characteristics (eg, decentralization).

This critique is central to the issue concerning the future form of currencies. According to Perez (2002, 2009) and her theory of techno-economic paradigms, we are today at the turning point of the current ICT-driven paradigm. We have gone through the installation period of the information technology revolution where economies experiment with new technologies, while finance capital invests in those technologies, albeit mainly on short-term investments. New financial tools have been created that produce more credit instead of fuelling the real economy. The NASDAQ bubble of 2000 and the more recent financial crisis of 2007 are, according to Perez, consequences of such speculative behaviours. Her argument, based on data from the evolution of the capitalist system since the 18th century, is that what we are living today is not just a financial crisis but a structural change as one period reaches its end and another emerges; one that will better utilize the dynamics of new technologies, creating synergies throughout society.

2. Digital Currencies and Bitcoin

It makes sense then that digital currencies are emerging in order to tackle the issues mentioned above. They embody the need for autonomy from the centralized financial system. The desire for non-credit money through modern technological capabilities of global

connectivity combined with cryptography has enabled several individuals and online communities to experiment with digital currencies.

Digital currencies are, in essence, electronic money, which serves as an alternative currency. Currently, individuals are producing digital currencies, not state actors. They should not be confused with the digitized form of currencies issued by states. There are two main categories of digital currencies: those used exclusively in a virtual economy of a platform or video game (eg, the Facebook credits, the Linden dollar in the online game Second Life or the various currencies in World of Warcraft) and those used in the real economy. This essay examines the second category, and specifically cryptocoins, as the most widely used digital currencies. Contrary to centralized digital currencies (eg, the E-gold, the Ripple, the Ven, or the Digital Monetary Trust), cryptocoins are decentralized, resistant to attacks and, thus, more reliable.

Cryptocoins as digital currencies are based on cryptographic technologies, and are therefore (partly) anonymous and decentralized in production and circulation. It is not easy for someone to suppress their activity due to their peer architecture. It is important to note that cryptography is a set of practices that ensure communication between two parties from tampering (Rivest 1990). Thus, cryptography ensures the proper circulation of money (eg, one may not spend the same set of currencies twice) but also the reliability of transactions (Luther 2013). Also, while cryptography ensures the uniqueness of each transaction, it also allows the logging of all transactions in a public ledger.

Today, all cryptocoins like Litecoin or Namecoin are based, with a few variations, on the principles of the most widely used and controversial cryptographic digital currency, the Bitcoin. As we will discuss in detail, cryptocoins are designed in such a way as to have zero inflationary tendencies (when all predetermined amounts of the currency are produced) and maintain their rarity and value. However, few cryptocoins, like PPCoin, are expected to have low inflation rates. So far, all cryptocoins are based on aliases, where the contracting parties communicate on the basis of the reputation each has acquired without attaching their real identities to those aliases. New cryptocoins, like the Zerocoin, have been proposed as solutions for complete anonymity.

Satoshi Nakamoto, whose name is presumed to be a pseudonym, first introduced Bitcoin in 2008 in a paper. On January 11, 2009, the Bitcoin project was announced on the Cryptography mailing list, while earlier a page was created on the Sourceforge platform (Barber et al. 2012). Little is known on the status of the founder of Bitcoin, whose involvement in the project ended in mid-2010. It is not confirmed whether the currency's founder is an individual or a group.

Bitcoin is basically open source software that supports the movement of currencies. The software circumvents banks and enables the circulation of alternative currency by exploiting peer networks. Instead of distributing the currency through a centralized network controlled by a central bank, Bitcoins are distributed by nodes participating in a peer network (much like the BitTorrent file sharing protocol). Further, as open source software, the Bitcoin system can be monitored by all users worldwide, while participants in the development and improvement of its code cannot make changes that transcend the logic of its original design.

All Bitcoin transactions are recorded publicly in a ledger known as the “block chain”. According to the Bitcoin wiki, this feature is the main innovation of Bitcoin since it renders nearly impossible the spending of a particular Bitcoin unit more than once. The work required for the certification of transactions and the maintenance of the ledger is done by computers participating in a peer network and as a reward they receive new Bitcoins or in some cases a fee (Brito and Castillo 2013). Those computers that accept to participate in the maintenance of the system are called “miners”. The Bitcoin protocol is designed in such a way as to create new coins at a decreasing rate and when the number of Bitcoins reaches a designated limit (21 million units) at a future time (estimated around 2140) then it will stop. After this point, the transaction fees will be the only incentive for mining.

One way to obtain Bitcoins is, as mentioned, through the mining process, which is becoming increasingly difficult to achieve, thus demanding technical skills and specialized

equipment. It is also possible to get hold of Bitcoins by exchanging it with conventional currencies on specialized websites or simply through the trade of goods and services.

Organizations and initiatives like Wikileaks, Freenet, Internet Archive, and the Free Software Foundation accept donations in Bitcoin. Several small and larger companies, such as LaCie, accept Bitcoins for their services, while the platform BitPay reported in September 2013 that more than 10,000 merchants use its services to make transactions (Lomas 2013). However, it is worth mentioning that the Electronic Frontier Foundation announced in June 2011 (Cohn 2011) that it would cease receiving donations in Bitcoins for three reasons: it is difficult to understand the complex legal issues that arise through the creation of a new monetary system; the uncertainty of its exchange status with conventional currencies; and third its use was perceived as an effort to promote the new currency.

As the network is in charge of issuing the Bitcoin, no central authority is involved (Kroll et al. 2013; Grinberg 2011). More than half of the 21 million Bitcoins had already been "mined" by December 2013[1] and reaching three quarters is expected by 2017 (Ron and Shamir 2013). Bitcoin's exchange rate is defined by the supply and demand in the market, thus making it extremely volatile and sensitive to external factors. In the next chapter we will discuss various advantages and disadvantages of Bitcoin that will help paint a clear picture of this infamous cryptocurrency.

3. Opportunities and Dangers with Bitcoin

Using the Bitcoin system to make transactions, an individual utilizes a mathematical algorithm instead of paying a third party (like a bank) to do it. The latter can prove to be quite expensive, especially in small transactions, but also demands a great deal of trust to the "middleman" which some are not willing to give (Martins and Young 2011). It should be mentioned that Nakamoto (2008) was not the first to suggest a solution to these issues with Bitcoin. Years before, Chaum (1983) had proposed an anonymous system of electronic payments; while Milton Friedman noted several times that the Federal Reserve System should be replaced with a computer.

Bitcoin's most important innovation, as previously mentioned, is the ability of the system to provide privacy but also the ability to track transactions. According to Lessig (2006), cryptography serves two purposes. One, it ensures secrecy of the communication between two parties and second, it provides digital identities to avoid counterfeiting. Thus "it enables freedom from regulation (as it enhances confidentiality), but it can also enable more efficient regulation (as it enhances identification)" (Lessig 2006, 53).

There is no need for a central node to prevent double spending and ensure reliability of transactions made. The network does that, thus maintaining the Bitcoin's nominal value (Barber et al. 2012). Bitcoin, being a peer-to-peer network, functions according to the same logic as the Internet (Brito and Castillo 2013; Grinberg 2011; Babaioff et al. 2012). Therefore, as noted by Barber et al. (2012) and Brito and Castillo (2013), Bitcoin is utilized by individuals who want to use a currency that is not controlled by any central authority, making impossible the freezing or blocking of transaction.

The design of the Bitcoin system provides the necessary financial incentives to participate (Barber et al. 2012). As discussed above, the creation of new units occurs with the help of miners, who are tasked to solve increasingly difficult mathematical problems for the production of new coins but also the certification of previous transactions. At the same time, they gain some low transaction fees in return for their contribution.

The fact that Bitcoin is an open source project has contributed greatly to its widespread adoption. The openness of the code makes the transaction process transparent and the creation of new coins subject to public scrutiny (Grinberg 2011). Researchers of the digital economy, like Weber (2004) and Benkler (2006), have highlighted the competitive advantage of open source ventures, since this approach facilitates the creation of a rich ecosystem around the project. In the case of Bitcoin, the open code has rendered the development of services and applications easy and flexible.

[1] Information from the Bitcoinwatch website, at http://www.bitcoinwatch.com/, accessed 10 December 2013.

Another innovative feature of Bitcoin is the capacity to embed scripts in transactions (Barber et al. 2012). Simply put, Bitcoin can be used as a method of setting up agreements between transactors. This feature allows users to overcome common problems that arise in transactions in a way that minimizes the need for trust. Contracts, warranties, instalments can be implemented in a transaction automatically. This feature is still in the early stages of development and its impact remains to be seen (Barber et al. 2012). There are already emerging alternatives, like Ethereum, that utilize this feature greatly. Further, Bitcoin transactions are irreversible. Once a transaction is registered in the blockchain no one has the authority to reverse it. This feature attracts traders who previously were dismayed by credit card fraud. With Bitcoin, trade is safer in countries with intense activity in card counterfeiting or users hacking payment procedures (Barber et al. 2012).

Last, one of the major advantages of Bitcoin is the low transaction charge. As emphasized by Grinberg (2011) it seems that Bitcoin is a good option for direct transactions of limited amounts and can play a key role in the digital economy and Internet commerce. Also, Bitcoin, as a non-fiat currency can be regarded as an excellent option for "gold bugs" that prefer currencies that are based on the value of hard assets (Grinberg 2011).

Yet Bitcoin has its fair share of drawbacks. Even though it is still very difficult for someone to make all the necessary transactions with Bitcoin, its popularity among users keeps rising. This would appear to pose a threat for the currency control of a country. China since December 2013 has bared financial institutions from conducting transactions with Bitcoin. The huge increase in its price shows signs of a "bubble", yet its growth has been powerful enough to alarm Chinese regulators.

Government involvement could potentially be stirred by Bitcoin's use for illegal activities like drug purchases, child pornography, money laundering, or tax evasion. Indicatively, in October 2013 the FBI arrested the creator of the infamous "Silk Road" platform, where anonymous users could purchase illegal goods, through an auction mechanism in Bitcoin (Goldstein 2013). Additionally, the U.S. government had prosecuted the authors of e-gold, an electronic currency based on gold reserves. They were accused of laundering as well as providing services to people involved in child exploitation, credit card fraud, and other wire frauds (Tucker 2009). Plassaras (2013) suggests that Bitcoin will soon pose a threat, and the IMF, in order to avoid a global destabilization, needs to take action.

Legal-wise Bitcoin is in a bit of grey area right now (Grinberg 2011). Banning Bitcoin does not seem like a realistic solution, no more than prohibiting paper currencies for many of the same problems. Christopher (2013) argues that the current efforts to combat money laundering on the Internet are misguided. Efforts, she explains (2013), should not focus exclusively on breaches of various control mechanisms but to hunt the actual criminals. Often Bitcoin is used as a medium for "shady" transactions creating obstacles for the authorities. Due to its peer nature and craftsmanship of many of its supporters, trying to limit Bitcoin seems like a vain attempt (Brito and Castillo 2013). Cooperation of the authorities with the community of Bitcoin, whose best interest is the viability of the currency, seems like a far better strategy. Meiklejohn et al. (2013) observe that small scale laundering is always possible; however, if someone would attempt to launder money on a large scale they would face problems since large Bitcoin transactions do not go unnoticed.

Like all objects that have occasionally been used as coin, from gold and cigarettes to the dollar and the euro, the Bitcoin is valuable as long as there are people who agree to use it. However, the Bitcoin in itself has no real value. One can smoke cigarettes or use gold in jewellery while the dollar represents a relationship with the Federal Reserve. Of course, the intrinsic value of these items is variable. Still Bitcoin has absolutely zero value in itself. It is intangible and represents hours and power (actually a lot of it) spent by one or more computers.

A more practical issue with Bitcoin is the fact that digital wallets may be lost. If, for instance, the hard drive is destroyed or the computer is infected by a virus, then it is very likely that the Bitcoins contained in it will be lost, like the case of a man who accidentally dis-

posed of a computer containing 9 million dollar's worth of Bitcoins.[2] In this case, since there were no backups these Bitcoins remain without an owner.

The value of Bitcoin fluctuates constantly under the relevant demand. We have seen, however, that these fluctuations are extremely steep at times. This forces businesses that accept the currency to often adjust the prices of products or services in Bitcoin. Also, any product returns produce inevitable confusion about the refund to the customer. For now, there appears to be no consensus towards a particular approach to tackle these problems. If the seller sends the goods to the customer, the latter has no legal protection since the transaction lacked an intermediary party. It is apparent then that the decentralized nature of Bitcoin, beyond its many advantages, holds significant disadvantages. Further, due to the lack of a central authority, there is no guarantee of a minimum price for the currency.

Bitcoin's predetermined number is one of its greatest liabilities. Reaching its limit, the price will be skyrocketing. This will possibly create, as is the case now, steep fluctuations of its price through its irregular spending. Those that first entered the system and those with powerful computers have a significant advantage over the rest of the users. Coin accumulation in the hands of a few enhances the danger of fluctuations through deliberate withholding or trading large sums in order to manipulate its price. Currently, approximately 20% of the total Bitcoins mined are owned by the 100 richest users.[3] For a currency that is supposed to bring change to the credit system this condition seems awfully familiar.

Ron and Shamir (2013), after studying the blockchain and recording patterns, isolated large sum transactions to later discover that almost all were related to one big transaction that took place in November 2010. They note that the users involved with this transaction appear to have attempted to cover their tracks with several methods. Through their research they revealed a scheme by a minority (almost 1%) to cheat the rest of the users endangering the whole system in the process. What is further illustrated is that Bitcoins' anonymity is easily compromised since each coin can be traced back from its miner up to its current holder. A Bitcoin address is just a number, but if enough information is gathered (through websites and fora) the identity of the owner can, possibly, be revealed (Martins and Yang 2011; Möser 2013). There are methods to protect one's privacy, yet this is still experimented upon (Möser 2013).

Being still in development it is yet unknown how many bugs are hidden in the code. As Bitcoin's popularity grows, so does the number of people searching for these bugs in order to take advantage of them. Martis and Yang (2011) have located the features in the Bitcoin code that make it prone to attacks, though up to this point all malicious activity has been dealt with effectively by the community. In addition Eyal and Sirer (2013) claim they located a security hole that allows the irregular creation of Bitcoin through the mining process.

Contrary to the belief that Bitcoin is a completely unrestricted currency, Kroll et al. (2013) claim that the Bitcoin ecology is going to need governance structures to survive. These structures are likely to be similar to those of other open source projects that aim to deal with attacks and design flaws. These modes of governance are based on consensus and if the leadership goes against it, the community is likely to choose another course (Kostakis 2010). Beyond this, recent developments have illustrated that a single mining pool could contribute so greatly to Bitcoin's computational processes that it could effectively control the entire system, thus putting an end to its decentralized structure.

We have discussed several advantages and problems that come with Bitcoin. Being still in early stages its future is yet unclear. It might burst like a bubble or it might be a game-changer. In the next section we will discuss the true impact of what Bitcoin has brought about as well as the need for further experimentation with alternative currencies, given their capacity to offer viable solutions to current problems.

[2] Information from Forbes website, at http://www.forbes.com/sites/kellyphillipserb/2013/11/30/from-treasure-to-trash-man-tosses-out-bitcoin-wallet-on-hard-drive-worth-9-million/, accessed 19 May 2014.
[3] Information from the Bitcoinrichlist website, at http://bitcoinrichlist.com/top100, accessed 20 May 2014.

4. New Horizons?

Bitcoin is widely viewed as an "apolitical currency", devoid of the troubles that burden other currencies due to it being just code, controlled by no one. Yet this is not the case. Besides the fact that there are signs of emerging governance structures in Bitcoin, we can also see that its entire logic follows the key rules of other currencies. The code is in charge instead of central banks but as Lessig (2006) puts it, on the Internet the "code is law", thus pointing out the politicalness that is imbued in each piece of software. In the real world, the law enables banks to mediate credit transactions between various parties. The law ensures the credibility of contracts, protects property rights, and regulates money circulation (Lessig, 2006). Whereas in the digital world, according to Lessig (2006), code assumes this role and defines what users can and cannot do. Therefore Bitcoin as a piece of software is imbued with ideas drawn from a certain political framework.

We have seen that Bitcoin is deliberately scarce. By limiting it to 21 million units, Nakamoto, or whomever is actually behind this project, has inadvertently created a condition in which the more popular Bitcoin becomes, the higher its price gets, making it more and more difficult to use. The buyer will be motivated to stall any transactions to take advantage of the climbing price, while the seller, for instance an artisan, would buy material now and by the time the final product is ready, the price would be unfavourable. In short, a deflationary currency puts pressure on the producer/seller to sell as fast as possible, while buyers prefer to wait in order to maximize their purchases. This situation clearly leads to crises. Presumably, the creators' intention was to create a currency that is rid of debt in the spirit of various politico-economical critiques of the credit system. As previously mentioned Bitcoins do not come about as credit relations between two parties but as "private" information in a network.

The formulation of a Bitcoin "aristocracy" is the result of the code's architecture. Members of this aristocracy are those that got into the Bitcoin game early on, when it was easy to create new units, and the owners of the so called "monster machines", powerful computers that specialize in Bitcoin mining (Davies 2013). This small percentage of users has accumulated a great amount of Bitcoins, thus exhibiting features of the credit system it is supposed to be trying to overcome but also threatening the viability of the whole project.

Bauwens and Kostakis (2013) claim that Bitcoin is not a Commons-oriented project aiming to satisfy the needs of society, but a currency that reflects a new type of capitalism—"distributed" capitalism. This new iteration of capitalism conforms to the characteristics of the network era and utilizes the peer-to-peer infrastructures to achieve capital accumulation. Bitcoin is designed to allow multiple users, though in a competitive framework. It might appear as though it exists outside the financial system, but by promoting scarcity and competition this project aggravates the over-accumulation of capital and exacerbates the social inequalities that it is supposed to combat. Distributed capitalism is premised on the idea that everybody can trade and exchange; or to put it bluntly, that "everyone can become an independent capitalist" (Kostakis and Bauwens 2014). The libertarian political ideology underlying this view advocates the elimination of the state in favour of individual sovereignty, private property, and free/open markets. In theory you have equipotential individuals (that is, everyone can potentially participate in a project), but in practice what one gets is concentrated capital and centralized governance. One could postulate that the anarcho-capitalist design of Bitcoin, based on the Austrian school of economics, in many ways exacerbates the characteristics of the neoliberal era (Kostakis and Bauwens 2014).

Further, in capitalism, continuous economic growth is a necessity for the viability of the system. Several studies point out the role of the environmental crisis and the inability of sustaining this kind of growth in a planet with limited resources. This situation inevitably creates a tension that leads to crises when the financial economy deviates from the real one. Bitcoin challenges the viability of the credit system and the idea that debt is historically the main characteristic of money and acts as an experimental transitory condition for a new alternative system. Some economists, like Greco (2009), propose the abolishment of state issued currencies in order to decentralize and democratize transactions. This proposition is based on the mutual credit principle instead of interest-burdened debt. As far as Greco (2009) is concerned, interest is synonymous to the obligatory economic growth that whether

is achieved or not, leads the system into crisis. The above can be achieved through the establishment of independent social currencies and mutual credit clearing circles among traders/sellers/producers. We can do better than existing digital currencies, argues Greco (2009) considering the Internet a proper experimentation ground.

Bitcoin should be viewed like a new technology, not just a currency. It has paved the way for new types of currencies that utilize new technological infrastructures and whose dynamics should not be ignored. Bitcoin as a protocol enables a decentralized network to achieve consensus without requiring any trust between parties. The potential of its innovations (for instance the blockchain) is so big that it has caught the attention of major banking institutions. The ability to embed scripts is also revolutionary and can set up terms and obligations within the blockchains, since it provides the possibility to enforce certain behaviours and limit corporate greed. However, we would say that the most important achievement is that it envisions an alternative approach to tackle the major problems of the current credit system. As an open source software programme, Bitcoin can get upgraded and it can get forked. The forking feature means that when an already set up economy becomes problematic it can be cloned by its users and given a new path. We are witnessing a plethora of new digital currencies and economies based on Bitcoin that aim to surpass the issues that were discussed in the previous chapter. Their efforts revolve around the belief that the current financial system is based on an unsustainable principle of continuous growth and attempt to implement social values into their structure.

Indicative of such efforts are Openmoney and Open UDC. Both projects provide the opportunity for communities to create their own alternative currencies. Ethereum utilizes the Bitcoin code to provide not just new currencies, but a whole new decentralized application. Peercoin on the other hand functions similarly to Bitcoin, but attempts to overcome its problems. Some of these currencies are based on trust between members of a community of producers and consumers; others allow mathematics to eliminate the concept of interest from the core of the financial system. Solarcoin uses solar energy production to back the currency, yet much like Bitcoin it does not tackle inequality since it favours the owners of solar energy technology. Moreover, the open payment system of Ripple is another promising initiative which not only lets you send credits (XRP, the native currency of the Ripple network) directly to others, but also it is possible "to hold IOUs in any currency, and easily send this money to anyone you're connected to by a ripple path"[4]. Further, time could possibly be used to back a more egalitarian digital currency, meaning that this technology can be used as a tool for other practices, such as timebanks, in order to assist and expand their activities. Each currency, however, creates its own system causing great complexity, precisely because the economy of each community will deal with others that use different currencies, which ultimately creates problems with exchange rates and trade balance. We feel that a great experimentation field for digital currencies would be online video games, like Second Life or World of Warcraft, since they possess massive groups of people with genuine motives but with no real dangers for the economy.

5. Conclusion

We have reviewed Bitcoin as the most prominent complementary currency. We attempted to make an account of its most important advantages and disadvantages, and then offered a broader view on the impact it can have on the world as an innovation. The press tends to view Bitcoin as either a doomsday device or a saviour. We think of it as a truly interesting experiment with a flawed, from a Commons-oriented perspective, political economy. One might say that rather than providing answers and solutions to the current views of the financial crisis, perhaps Bitcoin provides some useful and timely questions about the principles and bases of the dominant political economy. Therefore, we, as commoners, conclude that what we need are complementary currencies premised on a different political economy, one breaking the shackles of capitalist opportunism and ushering in a new era of economical transactions based on the finer aspects of the human spirit.

[4] Information from the Ripple website, at https://ripple.com/wiki/Ripple_Introduction, accessed 15 June 2014.

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