The Ontological Sociology of Cryptocurrency: A Theoretical Exploration of Bitcoin

Omar Eliud Villarreal Robledo
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THE ONTOLOGICAL SOCIOLOGY OF CRYPTOCURRENCY:
A THEORETICAL EXPLORATION OF BITCOIN

by

OMAR ELIUD VILLARREAL ROBLEDO
M.S. Florida Atlantic University, 2013
B.B.A. Inter-American University, 2000

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ABSTRACT

For millennia, money has been a basal element of everyday life reality in market-organized societies. Albeit money has changed extrinsically (e.g., form, use, utility) countless of times, some intrinsic characteristics remain the same, i.e., money is reified value. But why? What gives money value? Even more crucial, what is money in the first place? This exploratory study delves into the intricacies of money, in particular the revolutionary 21st century pecuniary techno-phenomenon, a cryptocurrency called Bitcoin. Though cryptocurrencies have been the topic of several financial and legal scholarly publications for a few years, we rather focus our analysis on Bitcoin’s ontological characteristics under a schema of overlapping theoretical layers: Social Exchange Theory, Marxian Dialectics, and Social Construction of Reality. Our intention is to dissect Bitcoin sociologically and empirically examine its global exchange, consumption, and institutionalization. Consequently, we venture to ask, can Bitcoin redefine the meaning of money and how we relate to it? Reformulate the role of banking? Disrupt the universally accepted objective reality of currency value attached to sensorial experience? Transfer trust from ambivalent human relations to an incorruptible algorithm? Or even become “the Internet of money”?

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“Money... it exists not by nature but by law.” – Aristotle

SECTION ONE - INTRODUCTION

GENERAL OVERVIEW

It was not an economist, hedge fund manager, banker, merchant, king or pope who gave us one of the most unsophisticated but insightful definitions of money. It was an Athenian metaphysical philosopher, discussing the characteristics of nomisma (i.e., money) as a function of nomos (i.e., law) in his Nicomachean Ethics. Most of modern professional moneychangers did not exist several centuries ago; at the time of Aristotle they were unimaginable. Even the concept of money itself has been subject to permutations and reconceptualization, particularly since the credit revolution in the Renaissance. Money has different meanings to different people, whether they are a nation, a state, a collective, or a small island in the Pacific Ocean.

When analyzing and deconstructing money in its many different functions and conceptualizations, we finish our journey with more questions than answers. Can there ever be a universal concept of money? Can the different meanings across...
cultures and time finally conciliate? Even more basic, what is money and what it means to live in a monetized social environment? Does money have value and where does it come from? Does money have to be a sensorial experience? Will the money of the future retain its fundamental qualities of physical representation or a cyber-version of it? Will a simulacrum⁶ be enough? These questions about the ontology of money are the core of this research project.

The purpose of this thesis is to explore the ontological sociology of cryptocurrency⁷, in particular the case of Bitcoin⁸. Albeit cryptocurrencies are a hot topic in a myriad of social circles, from coders⁹, speculators¹⁰, libertarians¹¹, criminals¹², and law enforcement¹³, much of the recent academic research has been focused on the cyber-mechanics of Bitcoin (e.g., programing), as investment vehicle (e.g., hedging¹⁴), or its legal status (e.g., property or exchange vehicle?). This thesis intends to contribute to the discipline by exploring Bitcoin, the cryptocurrency, from an ontological schema and analyze it under three different sociological theories or overlapping theoretical layers.

We begin the thesis research in section two, which is divided in two chapters. Chapter 1 looks into the construct of
money. It gives a general overview of its history, from shells\textsuperscript{15}, to gold coins\textsuperscript{16}, to fiat\textsuperscript{17}. It also explains the origin types of money, the pragmatic theories of money, and its ontological qualities. Implicit are its practical applications (e.g., pros and cons), and look into its users: Who? Where? and Why?

Subsequently, in chapter 2, the same investigation is performed but for Bitcoin. From its history to its interpretation as: cryptocurrency, ecosystem, protocol, and ideology. Complex technical elements and intricacies of the cryptocurrency operation, though relevant but not determinant for understanding the thesis analysis, will be mostly avoided. Notwithstanding, diagrams are freely used throughout this document for easier comprehension and visualization of technical and theoretical concepts. An extensive list of external educational sources is available on the appendix.

The third section of the thesis, chapters 3 to 5, deals with the ontological schema, which is divided in three theoretical overlapping layers from which bitcoin is analyzed sociologically. The first layer of analysis, chapter 3, is Social Exchange Theory (SExT). Based on the classic works by Homans, Blau, Emerson and recent developments by Cook (1987 & 1992), bitcoin is analyzed from the standpoint of “fiat money”\textsuperscript{18}. 

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Why do people give monetary value to bitcoin? Why would they engage in exchange with anonymous users located anywhere in the world? How the user community deals with free riders and zealots? Do actors prefer bitcoin to fiat money due to collectivized value domains?

The second layer of analysis, chapter 4, is Marxian Dialectics. From here, bitcoin is examined under two sublayers. Sublayer 1 looks into the Labor Theory of Value or bitcoin as Commodity Fetishism. From Marx's Theory of Money Commodity (i.e., value-forms)\(^1\), bitcoin could be exchanged as commodity instead or in addition to simple money, alienating its users from the transaction while attributing them the subhuman role of medium of exchange. Could a money with no physical form become the modern “god of commodities”\(^2\)? Sublayer 2 examines Social Conflict Theory or Bitcoin as antithesis. In this dialectical equation, bitcoin represents covertly the class struggle of the modern “precariat”\(^3\) and the anarcho-capitalists against the chains of international debt servitude\(^4\), annihilation of physical cash\(^5\), and perpetual inflation\(^6\) embodied in the Central Bank.\(^7\) There is a clear intrinsic existential conflict between populist decentralized and quasi-anonymous bitcoin and capitalist fiat money.
The third layer of analysis, chapter 5, is Social Construction of Reality. Following the theoretical development of Berger & Luckmann (1966), Bitcoin is analyzed as an objectified institution. How could a computer program, a pure subjective construct with no materiality, become such a powerful vehicle of unification and cooperation across the world? Can collective virtual money overcome physical (though fiat) private money issued by central banks? Will cryptocurrencies not only challenge, but also structurally change the calcified status quo of the current global banking oligarchy\textsuperscript{26}? Is Bitcoin's code Lacan's "the big Other"\textsuperscript{27} metaphysically supervising and authorizing transactional behavior?

The fourth section of the thesis, chapter 6 to 8, covers the methodology and results, which are divided in layers as well. Layer one, chapter 6, analyzes the worldwide transactions and exchange of bitcoin, i.e., as money. With the aid of charts, global market capitalization, price fluctuations, and daily volume are shown relative to the US dollar since bitcoin's inception in 2009. Layer two, chapter 7, analyzes the worldwide consumption of bitcoin, i.e., as antithesis. Employing surveys, we ask where, who, and why of Bitcoin’s ecosystem, and compare bitcoin to other cryptocurrencies\textsuperscript{28}, alternative currencies\textsuperscript{29}, and
anti-money contributionistic or techno-utopian social movements\textsuperscript{30}. Layer three, chapter 8, analyses the worldwide institutionalization of Bitcoin, i.e., as social construction. Here we evaluate Bitcoin’s legitimation across several sovereign states, and diagrammatically visualize the where, who, and why relative to fiat money and institutionalized money authorities.

In section five, chapter 9, we reach the conclusion of the thesis. In it, we discuss several general remarks about the cryptocurrency and ecosystem, how and where Bitcoin fits in the foreseeable future, how we as mortal humans relate to its immateriality, and whether capitalism and what we understand as money will evolve in tandem or become obsoledge\textsuperscript{31}.

Notes

\begin{enumerate}
\item Aristotle. (c. 350 BCE). Nicomachean Ethics [1133b 1], Book 5.
\item Moneychanger: One whose business is the exchanging of kinds or denominations of currency. Retrieved June 7, 2016 (www.merriam-webster.com/dictionary/moneychanger)
\item For a review of the Renaissance's credit revolution, see Economic Credit and Elite Transformation in Renaissance Florence. Retrieved June 7, 2016 (home.uchicago.edu/~jpadgett/papers/published/credit)
\item E.g., the value of paper money (bank notes) and gold is subjective. They have no intrinsic value; it is solely based on institutionalized (i.e., imposed) social norms and traditions what gives them any value.
\item E.g., the value of food and shelter are objective. They have intrinsic value, either as a source of nourishment (i.e., calories) or protection against the elements.
\item Simulacrum: Something that replaces reality with its representation. Retrieved June 7, 2016 (www.cla.purdue.edu/english/theory/postmodernism/terms/simulacrum.html)
\end{enumerate}
Cryptocurrency: A digital or virtual currency that uses cryptography (e.g., SHA-256) for transaction security (pseudo-anonymity), counterfeiting prevention (anti-double spending) and creation of new coins (anti-inflation). Cryptocurrency is electricity converted into lines of code with monetary value, i.e., digital currency. Retrieved June 7, 2016 (www.cryptocoinsnews.com/cryptocurrency)

Bitcoin: A decentralized digital currency that enables instant payments to anyone, anywhere in the world. Bitcoin uses peer-to-peer technology to operate with no central authority: the network carries out transaction management and money issuance collectively. Retrieved June 7, 2016 (en.bitcoin.it/wiki/Help:FAQ#What_is_Bitcoin.3F)

Coder: One who writes the instructions that a computer will follow when executing an application. Written initially as source code, which is a human-readable format, it is then translated into a programming language that a computer can understand. Retrieved June 7, 2016 (www.businessdictionary.com/definition/software-coder.html). E.g., Bitcoin Core development. Retrieved June 7, 2016 (bitcoin.org/en/development)


Fiat money: A currency that a government has declared to be legal tender, but is not backed by a physical commodity. The value of fiat money is derived from the relationship between supply and demand rather than the value of the material that the money is made of. Historically, most currencies were based on physical commodities such as gold or silver, but fiat money is based solely on faith. Fiat is the Latin word for “it shall be”. Retrieved June 7, 2016 (www.investopedia.com/terms/f/fiatmoney.asp)


Central Bank: An entity responsible for overseeing the monetary system for a nation (or group of nations). Central banks have a wide range of responsibilities, from overseeing monetary policy to implementing specific goals such as currency stability, low inflation and full employment. Central banks also generally issue currency, function as the bank of the government, regulate the credit system, oversee commercial banks, manage exchange reserves and act as lender of last resort. Retrieved June 7, 2016 (www.cgap.org/publications/bitcoin-vs-electronic-money)


For an updated list of cryptocurrencies around the world, visit: www.cryptocoincharts.info/coins/info


"As a rule political economists... do not take the trouble to study the history of money; it is much easier to imagine it and to deduce the principles of this imaginary knowledge." – Alexander Del Mar

SECTION TWO - LITERATURE REVIEW

CHAPTER 1: WHAT IS MONEY?

History

Money's origin is concealed in ambiguity and irregularities. Even though money as an artifact is as old if not older than monotheistic religion, its historical roots are not as widely spread, standardized and known to the general public as other institutions operating today. Economics, as an academic discipline, has not been at all helpful in explaining once and for all what is money, how it operates, and where it comes from.

Understanding money is determinant if one is to fathom human relations. Money’s history, theories and processes, are above everything, the history of social power structures. Money has been the centerpiece in the development of ruling classes and hierarchical communities, from the days of Babylonian merchants to the 21st century hedge fund managers. Albeit money itself as an institution is value free, she or he who controls it position
themselves in a privileged status, whether they decide to do good or not in society. In modern times, due to economic globalization and the development of instant communication technologies, monetary decisions from a small group of individuals (whose intention is solely to profit from it) can have a catastrophic tsunami effect on billions of people around the world. The current great recession (an overoptimistic misnomer) is a perfect example of the power of money over the human race.

Money has been subject to a continual mystification process for thousands of years. Money has evolved from the local trade of cattle and seeds back in Homeric days, to the daily global trade of billions of cybernetic algorithms representing monetary value in stock exchanges. Though the chronological development of money is of intellectual relevance, we will cover this aspect briefly as our focus lies in the analysis of money from the following three categories: Origin Types, Pragmatic Theories, and Ontological Qualities. It was decided to use a different approach than the typical diagrammatic classification used in anthropology due to limitations in its explanation of money's general functions and forms [Fig. 1].
Figure 1: Anthropological Characteristics of Money

Comparatively, Zelizer's three-prong sociological interpretation of money as an interaction process is explored in Figure 2.

Figure 2: Sociological Characteristics of Money
The origin of money is divided in three general types: sacred/religious, state/social, and commercial/trading [Fig. 3]. The religious origin is based on the work of Paul Einzig (1966) and Bernhard Laum (1924). Einzig presents a case where "primitive man was guided by non-economic considerations. Among these the belief and fear of supernatural forces...The evolution of the economic system in general was itself largely influenced by the religious factor" (1966). Laum, on the other hand, posits that the origin of money is established in religious cult, as the prescribed offering to the gods and payment to religious chiefs.

Figure 3: Origin Types of Money
Subsequently, the convention for religious payment extended to private transactions. This correlates to Durkheim's concept of *sacred and profane* (1915:47), where it could be argued that money is the embodiment (e.g., totem) to purify the profane with sacred gifts. In Babylonian days, and centuries later under Hellenic and Roman Republic rule, the role of money as sacred gift, usually in the form of precious metals (e.g., gold, silver, electrum), became institutionalized in pagan religions. No more cattle and grain were the preferred form of offering for advice and protection from the gods, but its weight in gold equivalent. Consequently, gold became money\textsuperscript{13}.

The social origin of money introduces a different approach. Anthropologist A. H. Quiggin (1949) proposes, from empirical ethnographic evidence “that barter... was not the main factor in the evolution of money. The objects commonly exchanged in barter do not develop naturally into money and the more important object used as money seldom appear in ordinary barter”. She also acknowledged “the objects that are the nearest approach to money substitutes may be seen to have acquired their functions by their use, not in barter but in social ceremony” (1949). This is related to the special type of money, rather than the general type, where money had specific roles in social interaction.
(e.g., brides, rituals, death) and was not related to economic trade or profit motives. This origin model runs counter to the trade origin, much guarded and promulgated by mainstream economics\textsuperscript{14} and other minions of financial capitalism\textsuperscript{15}. The monetary theory of Chartalism could have its roots in the state/social origin of money, where the state is solely responsible for the issuance of money, irrelevant of any intrinsic value. This will be covered in the following section, the Pragmatic Theories of Money.

Lastly, the trading origin of money asserts that it originated from the need of trading goods and services in a more efficient way, compared to barter and direct trade in pre-monetary societies. Albeit Graeber (2011) refutes the barter origin, this version has been and still is the most popular in contemporary economic parlance since the days of John Law\textsuperscript{16}. According to this version, trading goods with unequal values was cumbersome and timing of trade was not always in unison, therefore a commodity with similar ontological qualities (i.e., scarce, portable, divisible and fungible) became the modus operandi as medium of exchange, thereby replacing barter. As time passed and use became not only common, but widely spread across different markets and communities, liquidity expanded and
this commodity became money commodity. This origin model has certainly influenced Metallism monetary theory\textsuperscript{17}, where all monetary value resides in the intrinsic characteristics of the commodity in use, rather than from the state or other socially commanding institution. This origin model is more an apologia for the birth of monetary metallism, instead of money itself. It will be discussed in detail in the next section.

Pragmatic Theories of Money

These four theories with corresponding spinoffs deal with both the orthopraxy and orthodoxy of money, i.e., how money operates in society as an interaction mechanism among subjects, what gives money value, and the philosophical justifications behind its daily practices. One general theory is classified as endogenous or money's creation emanating from the inside (e.g., the state, central bank), and three are exogenous or money's creation emanating from the outside (e.g., private banks, gold and labor). The endogenous vs. exogenous dilemma can be ambiguous in its empirical application, for the reason that agency in money creation is a matter of perspective [Fig. 4]
Albeit generally different, these theories are neither absolute nor exclusive. In several occasions throughout history they have overlapped with each other. A visual representation of them is explained in detail in Figure 5.

The first theory of money analyzed is Chartalism (or Anti-metallism), originally developed by George Friedrich Knapp in 1905\(^8\). He proposed in *The State Theory of Money*, that money should have no intrinsic value and should be issued, under monopolistic power, by the government alone as fiat money.
Chartalism became, for the most part of the 20th century, the model used by rich capitalistic countries to run their monetary policy. From America, to Europe, to Japan, a Central Bank is in charge of monetary policy (e.g., issuance of money, interest rate targeting, unemployment), always supplying fiat money to the economy with no intrinsic value apart from its legal tender status. It is important to point out though, that not all Central Banks are government agencies or institutions, but powerful Private-Public Partnerships (PPPs) or private for-profit business entities. This difference in applied theory is one paradox of Chartalism as it is practiced in modern capitalist economies.

The second theory of money is Metallism. As mentioned in the previous section, metallism posits that its value is a positive function of the purchasing power from which it is anchored. In a
metallist monetary system, as much of the world was from the signage of the Breton Woods system in 1944\textsuperscript{21} to the suspension of gold convertibility by US president Nixon in 1971\textsuperscript{22}, the state's currency can be minted from the commodity itself (e.g., gold coins) or by legal tender banknotes redeemable by decree to the official commodity (e.g., silver dollars). Metallism, albeit originally termed by G. F. Knapp\textsuperscript{23} and subsequently developed as full theory by Carl Menger (1871), its roots go back to Aristotle (c. 350 BCE) who proposed a “unit”, i.e., commodity, “fixed by agreement” that could be used for exchange but never mistaken for wealth. Aristotle was adamantly opposed to usury\textsuperscript{24}, since it bears profit from “barren” money (tokos\textsuperscript{25}), instead of fair “interest” from living objects (e.g., cattle and seeds). Metallism has the benefits of decentralization of monetary power from the state, but at the same time this power can (and has) been concentrated in the hands of few merchant and banking families since the Renaissance\textsuperscript{26}.

The third theory of money is epitomized in the “the god of commodities” and the supreme “value of all things”\textsuperscript{27}, Marx's theory of the Money Commodity. Marx's conceptualization of money relies fundamentally in the concept of “abstract labor”, derived from his Labor Theory of Value. Marx defines value as the
objectification of labor and thus alienated in commodities, presenting itself in the market as “exchange-value”, thus achieving “independence” in money, the “value-form”. Money becomes the necessary condition for exchanging commodities and their production. Marx brilliantly advised that money is a “surface phenomenon”, a simulacrum in Baudrillard's jargon\textsuperscript{28}, rendering any intention to redefine it as futile. Marx's theory of money, though unintended idealistic, was aimed at materialism and revolution. For Marx, the commodity is solely interpreted, whether as social construct or philosophically, as alienated human being, labor. Nelson (1999) argues that Marx's theory of money is “neither a commodity nor a nominalist theory of money”. Thus, Marx refashioning of Engel's account of money as an “objectified” concept of value, and because “money is the universal self-established value of all things... Money is the strangled essence of man’s work and man's existence...”\textsuperscript{29}, Marx's commodity theory of money can be correctly denoted as “the theory of the money commodity”. Marx final aim was the “dethroning of money” and the complete “overturning of the state”\textsuperscript{30}.

The fourth and last monetary theory is the Credit Theory of Money (CMT), also known as Debt Theory of Money [Fig. 6]. Though
originally proposed by H. D. Macleod in *The Theory of Credit* (1889), this concept was not fully developed until Mitchell-Innes wrote *What is Money* (1913) and *The Credit Theory of Money* (1914). The fundamental tenet of this theory is the factual equivalence of money to debt and credit. It assumes the birth of money as an exclusive transaction tallying mechanism, and that money creation itself is solely the creation of debt. Graeber (2011) concluded in his anthropological study of money that historical convention, until the last two centuries, has been the recognition of money as debt. Under this theory (CTM), both commodities based (e.g., Metallism) or fiat based (e.g., Chartalism) fit under the aegis of money as debt. The monetary cycle is a reciprocal process where exchange between the seller and buyer is a continuous flow of commodities (debit) and currency (credit), independent of the money form’s intrinsic value. Thus, the value of money is a function of trust and rights, composed of the exchange parties (i.e., merchants), the state (i.e., legal tender quality), and the issuers of the currency (i.e., banks).
Observed under scrutiny, there is a dialectical essentiality in this credit theory. It can be argued that credit is the thesis (creation on value), while debit is the antithesis (destruction of value), thus arriving to money itself as the synthesis of the dialectical equation, incentivizing the cycle of fractional reserve lending\textsuperscript{31} \textit{ad infinitum}.

The following three theories are spinoffs of the Credit Theory of Money. They are included in this analysis due to their empirical relevance because several capitalistic economies have
been using some variation of them since the 1970s. Sub-theory one is the Monetary Circuit Theory, also known as “Circuitism”. It was formalized by Augusto Graziani in The Theory of the Monetary Circuit (1990). Circuitism is well connected with the post-WWII Keynesian and Minskyan schools of economics. Circuitism puts forward the idea that money creation is an “endogenous” process when executed by the banking sector, rather than the “exogenous” experience when, for example, a central bank is in charge of money issuance for circulation. This money creation procedure, contrary to Metallism or Chartalism, is solely based on the private creation of debt (thus credit money) in accounting ledgers, with no need (at least until required) for any material representation or commodity reserves [Fig. 7]. Every market transaction involving money is intermediated by a third party, a bank, rendering the whole economy systematically at the expense of the optimal functioning of the banking institution, in terms of social norms and applied technology. This theory has been gaining popularity in the global movement for a cashless society, where money becomes absolute electronic debt and hard cash turns obsolete. Scandinavia is toying with the idea and plans to be the first cashless economic region by 2030.
Sub-theory two is the Quantity Theory of Money (QTM), developed by Irving Fisher (1911) and von Mises from the Austrian School (1912), posits that price levels in the market economy have a positive and corresponding correlation with money supply. Thus, price “inflation” of commodities is proportional to the “country's inflation” of currency in circulation\(^{37}\). This model is only effectual in the long run, since prices and money velocity\(^{38}\) do not flow at steady speeds in the short run, creating money supply and price level imbalances in the economy.

The final sub-theory is the Quantity Theory of Credit, proposed by Richard Werner in 1992. His theory was fully developed and explained in the *New Paradigm in Macroeconomics* (2005), suggesting from econometric modeling that money creation
via bank credit intended for GDP growth did incentivize GDP growth, versus credit creation for finanzialization\textsuperscript{39}, which creates asset bubbles\textsuperscript{40} and economic instability, as seen in the global financial crisis of 2007-2009\textsuperscript{41}. This theory, though well intended, has had the same long term negative results in practice as A. Laffer's supply-side economics\textsuperscript{42} curve and J. Sachs's shock doctrine\textsuperscript{43}. The abysmal disconnection of mainstream economic modeling and physical reality, from the perspective of social human behavior, cannot be more evident as in the application of destructive fiscal and monetary policy across the world since the late 1970s\textsuperscript{44}. As mentioned before, money begets power, just as power begets money. Bank endorsed neoliberal capitalism is a self-feeding system that has less to do with exchange of commodities and much with the symbolic exchange of ideology and control\textsuperscript{45}.

\textbf{Ontological Qualities of Money}

There are eight fundamental characteristics that have defined money across history, though not always at the same time or location. In no particular order, we will examine each one of them properly as they are used today [Fig. 8].
It is imperative to acknowledge that currency is money, but not all money is currency. For currency is only a generally recognized or legal representation of money in a particular social ecology or political state\(^4^6\), say the US dollar ($) in the USA, the EUR (€) in the Euro zone or cacao beans in the Aztec empire\(^4^7\). Incorporating the circulation of currency eliminates the “coincidence of wants”\(^4^8\), predicament observed in underdeveloped currency-less markets and barter based economies.

The first quality is *fungibility*\(^4^9\), or the property to exchange or replace the specimen (i.e., money) in question for another identical specimen, i.e., mutual interchangeability or substitution. For example, a US $20 Federal Reserve note is fungible to another US $20 Federal Reserve note, assuming that both $20 dollar bills are not counterfeit. The second quality is *durability*\(^5^0\), or the property for the specimen to survive the
physical demands of cycling in the market economy. For example, metallic coins are the best illustration. Their roughness gives them the quality to survive the test of time through millennia, as in the case of Roman and Hellenic tokens. Paper notes, on the other hand, have a much shorter lifespan, either by physical exhaustion from use or semiotic\textsuperscript{51} invalidation. The third quality is divisibility\textsuperscript{52}, or the property for the specimen to be divided in multiple representations of itself without losing any essential quality. This property assumes quantifiability for arithmetic computations, i.e., accounting. For example, a US $20 dollar note is divisible into US $10s, $5s, $1s dollar Federal Reserve notes or corresponding US Treasury minted coinage, all accountable amounts of money. The fourth quality is recognizability\textsuperscript{53}, or the property to identify with the senses aid, the specimen in question. For example, legal tender notes and coins have been physically stamped with semiotic symbology for easy identification and protection against counterfeit. The masonic pyramid, US President's faces, and Arabic numbers in US dollar notes are a clear illustration. The fifth quality is tangibility\textsuperscript{54}, or the property to physically touch the specimen. Albeit it can be labeled a sub-category of recognizability, it has important historical relevance. For much of human history,
at least close to 5000 years (Graeber 2011), money has had a physical form (e.g., as coins). It was not until the creation of electronic money (i.e., the credit card) about the middle of the 20th century that money's materiality began to submit. Today, there are approximately $1.4 trillion US dollars circulating in physical currency (Federal Reserve System notes aggregate in every denomination), while the number of metaphysical US dollars (i.e., as electronic debt-money) circulating in the US economy alone has reached over $50 trillion. The sixth quality is scarcity, or the lack of specie abundance in the market regulating its value. This quality mostly applies to metallic money, as in the case of gold billion or coinage, whose supply is quantifiably constrained by nature. This is not the same for fiat money, whose volume (and by default value) is deliberately adjusted by the "power of the pen". The seventh quality is transportability, or the property to carry specie in an efficient and effective way. For millennia, local government token money (in precious metals or other materials) has been used to physically transport wealth. This exercise was cumbersome, risky and time consuming, particularly at times of emergency as in the case of war or natural disasters. When modern banknotes (i.e., bills and paper IOUs) were introduced in
1694 after the Bank of England's Charter, money took a new successful identity form, which is still used to this day by most economies. Counterfeit money, alas, has been both bank notes and coins nemesis since its invention. The eighth and last quality is liquidity, or the property to exchange the specie for another specie, commodity or service quickly. Liquidity itself demands other qualities mentioned above to exist beforehand, but still is a determinant element to money's proper functioning. For example, US dollar bills are absolute liquid money, colloquially referred as cash. They are accepted anywhere in the market and can be exchange for any other currency, or goods and services. Electronic cash is even more liquid, due to transaction's immediacy from lack of time, location or distance constrains. Gold, though money, is not liquid. In contrast, S&P500 ETF contracts, though highly liquid, are not money.

Notes

4 Droit, 1998. What is the Meaning of Money?
15 Law, 1705. Money and Trade Considered.
18 Public-Private Partnerships: A long-term contract between a private party and a government entity, for providing a public asset or service, in which the private party bears significant risk and management responsibility, and remuneration is linked to performance. Retrieved June 8, 2016 (ppp.worldbank.org/public-private-partnership/overview/what-are-public-private-partnerships)

“The most hated form of money-making 'is usury, which makes a gain out of money itself, and not from the natural use of it. For money was intended to be used in exchange, but not to increase at interest. And this term usury (i.e., tokos), which means the birth of money from money, is implied to the breeding of money, because the offspring resembles the parent.'” Hudson, 2000. Michael-Hudson. How Interest Rates Were Set, 2500 BC-1000 AD. Retrieved June 8, 2016 (michael-hudson.com/2000/03/how-interest-rates-were-set-2500-bc-1000-ad)


Fractional Reserve Lending: A banking system in which only a fraction of bank deposits are backed by actual cash-on-hand and are available for withdrawal. This is done to expand the economy by freeing up capital that can be loaned out to other parties. Most countries operate under this type of system. Retrieved June 8, 2016 (www.investopedia.com/terms/f/fractionalreservebanking.asp)


Ledger Balance: The balance of a customer account as shown on the bank statement. The ledger balance is found by subtracting the total number of debits from the total number of credits for a given accounting period. The ledger balance is used solely in the reconciliation of book balances. Retrieved June 8, 2016 (www.investopedia.com/terms/l/ledger-balance.asp)


Inflation: The rate at which the general level of prices for goods and services is rising and, consequently, the purchasing power of currency is falling. Central banks attempt to limit inflation, and avoid deflation, in order to keep the economy running smoothly. Retrieved June 8, 2016 (www.investopedia.com/terms/i/inflation.asp)


Asset Bubble: When the prices of securities or other assets rise (boom) so sharply and at such a sustained rate that they exceed valuations justified by fundamentals, making a sudden collapse likely – at which point the bubble deflates (burst). Retrieved June 8, 2016 (lexicon.ft.com/Term?term=asset-bubble)


Coincidence of Wants: In barter or no-money exchange for goods, the parties involved are conditioned by an optimal synchronicity of time and space for the transaction to occur. When money or a universal commodity is introduced in market transactions, ceteris paribus, this condition is eliminated or greatly reduced while speeding the trading process simultaneously. Term operationalized by Villarreal, 2016.

Fungibility: A good or asset interchangeability with other individual goods/assets of the same type. Assets possessing this property simplify the exchange/trade process, as interchangeability assumes that everyone values all goods of that class as the same. Retrieved June 8, 2016 (www.investopedia.com/terms/f/fungibility.asp)


For a comprehensive list of the world’s central banks and monetary authority websites, visit: Bank for International Settlements (www.bis.org/cbanks.htm)

Exchange-Traded Fund (ETF): A marketable security that tracks an index, a commodity, bonds, or a basket of assets like an index fund. Unlike mutual funds, an ETF trades like a common stock on a stock exchange. ETFs experience price changes throughout the day as they are bought and sold. ETFs typically have higher daily liquidity and lower fees than mutual fund shares, making them an attractive alternative for individual investors. One of the most widely known and traded ETFs tracks the S&P 500 Index (SPY), called a SPDR (Standard & Poor's depositary receipt). Retrieved June 8, 2016 (www.investopedia.com/terms/e/etf.asp)
“In order to change an existing paradigm, you do not struggle to try and change the problematic model. You create a new model and make the old one obsolete.” - R. Buckminster Fuller

CHAPTER 2: WHAT IS BITCOIN?

History

Now that we have a foundation on the principles of money, we can explore the core subject of the thesis, Bitcoin. Starting from the basics, Bitcoin with capital “B” [Fig. 9] refers to the protocol\(^1\), the community or ecosystem\(^2\), the cryptocurrency, and the “code”. Bitcoin with lower “b” or “BTC” [Fig. 10], however, refers to the cryptocurrency (i.e., money) exclusively. Both terms will be used contextually throughout the development of this work.
This chapter is divided into several sections, each exploring bitcoin from a particular ontological qualifying category [Fig. 11]. Each section from this chapter is complemented, for painless visual conceptualization, with a myriad of diagrams. Regardless, for Bitcoin’s technicalities,
consult the appendix. It includes a comprehensive list of references to videos, online publications, and books covering different levels of complexity. As the thesis's title suggests, our focus is on the ontological sociology of Bitcoin.

Figure 11: Ontological Qualities of Bitcoin
Diagrammatic interpretation by Villarreal, 2016.

Bitcoin is the metaphorical child of Satoshi Nakamoto, whose identity is unknown to this day. In 2008, Nakamoto published online a white paper titled *Bitcoin: A Peer-to-Peer Electronic Cash System* [Fig. 12]. Nakamoto was highly concerned with third party dependence on electronic financial transactions, for three particular reasons: high transaction costs for small amounts of money, unchallengeable trust on an intermediary for transaction
executions, and the reversibility of payments. Nakamoto’s solution to these challenges lies on the basic function of Bitcoin’s protocol, the development of an “electronic payment system based on cryptographic proof instead of trust.”

Figure 12: Bitcoin as P2P Electronic Cash System

Though Bitcoin is based on a peer-to-peer (P2P) exchange model, it is the “code” and not the parties involved in the trade who validates the transaction itself. Trust, the imperative resource for financial assets to maintain their value (e.g., dollar bills, treasury bonds, corporate stocks), would be supplanted from financial institutions (public or private) subjective power
as money merchants (i.e., gate keepers) to Bitcoin's objective "code". In other words, the "code", a fully immaterial regulatory entity only existing in the world of cyberreality and human imagery, becomes objectified while replacing physical human interaction. This reificatory quality of Bitcoin will be theoretically explored in depth in the following three chapters.

**Bitcoin the Cryptocurrency**

Although there are more than 3000 cryptocurrencies in circulation to this day, bitcoin has been the leader in terms of valuation and usage since introduced back in early 2009. But what does cryptocurrency mean? Dividing the word in its two etymological roots, the crypto refers to the cryptographic protocol used by Bitcoin to eliminate the "double spending" paradox. The currency refers to its relation to the Bitcoin ecosystem, i.e., bitcoin is the unofficial money of the Bitcoin global community. More than money as regularly conceptualized, bitcoin is simply a unit of account or ledger, numbers in a computer screen exchanged online when traded from one party to another. Like physical cash, bitcoin is anonymous in the sense that it cannot be traced back to a particular individual.
However, it is not fully anonymous (i.e., pseudo-anonymous [Fig. 13]) because transactions are publicly and chronologically registered in the “blockchain” (e.g., how many and at what time), albeit the owner of the transaction remains anonymous.

As cryptocurrency, bitcoin qualifies as medium of exchange, or as Nakamoko (2008) called it “peer-to-peer version of electronic cash”. These two qualities suggest bitcoin's potential value, composed of its scarcity and utility [Fig. 14]. Bitcoin has a limit of approximately 21 million BTC units to ever be issued (Nakamoto 2008). A new “block” with a set number of bitcoins, which are cut in half every 4 years, is mined every 10 minutes. Every bitcoin is divisible to 1/100 million units, commonly referred as a Satoshi.
Another peculiarity of Bitcoin’s protocol is the decentralization of the issuing or “mining”\(^\text{13}\) of bitcoins, this performed by the global network of “nodes” [Fig. 15]. Contrary to standard banking practice, bitcoin is issued privately by individual users. In modern capitalistic economies, central banks or private banks issue money, with monopoly power over its creation and policies, and authority to legally punish anyone attempting to issue private money\(^\text{14}\). This dilemma has caused much controversy to the legal establishment in the US and other countries around the world\(^\text{15}\). No international consensus has been achieved; bitcoin still exists for the most part in an identity legal limbo of money vs. property vs. commodity\(^\text{16}\).
Figure 15: Bitcoin Mining Process

For a comparison and ranking between BTC and other varieties of money relative to the 8 ontological qualities, see Table 1.

Table 1: Ontological Qualities Comparison of Money Types

<table>
<thead>
<tr>
<th></th>
<th>BTC</th>
<th>US dollars</th>
<th>Gold</th>
<th>Treasury Bills</th>
<th>Bank checks</th>
<th>Ox</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fungible</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Durable</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>Portable</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Divisible</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Tangible</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Recognizable</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Scarce</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>Liquid</td>
<td>-</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Aggregates</td>
<td>5</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

Scores: 1 = yes (positive), 0 = no (negative), - = relative (neutral).
From the table above we can clearly acknowledge bitcoin’s potentiality as a parallel or substitute to bank issued money, the one type of money with the highest aggregate score. Albeit bitcoin’s absence of tangibility and recognizability are no match to paper money or gold, both ontological qualities simultaneously yield a spatiotemporal freedom not afforded by any other form of money. It is only the liquidity (i.e., ubiquity of exchange) quality then, where fiat money has an advantage over bitcoin, understandable fact because the cryptocurrency has only been circulating since 2009. Within several years, ceteris paribus, bitcoin not only can match the liquidity levels of paper based money, but even surpass it.

Bitcoin the Ecosystem

The community or ecosystem comprising Bitcoin can be classified in 2 main groups, users and service providers. The users a divided in 2 classes per intentionality, while the service providers by type. Participation on any one group is not mutually exclusive. In some cases, participants overlap in their roles several times [Fig. 16 & 17].
Bitcoin consumers are comprised of two classes according to the value extracted from each bitcoin utilization. The first
category is the users of bitcoin as medium of exchange, composed of two participants, merchants and consumers. Merchants may use bitcoin to increase sales, expand market share, minimize transaction fees and returns, stay ahead of the competition technologically, and facilitate the commodity exchange cycle. Complementarily, consumers also find value in bitcoin as medium of exchange on the other side of the commodity exchange spectrum. Paying with bitcoin is fast, reliable, convenient, and as anonymous as paying with legal tender cash.

The second category is the users of bitcoin as profit instrument, composed of speculators, investors and miners. Speculators use bitcoin to make a quick profit from price fluctuations and volatility\textsuperscript{17} in the currency, whether the price moves up or down. Speculators buy and sell bitcoin in person, via wallet to wallet, or more commonly in exchanges. There are multiple trading strategies now applicable to bitcoin, from margin accounts, to futures, options, and arbitrage\textsuperscript{18}. Investors, on the other hand, have the same intention of making a profit from price fluctuations on bitcoin's price, but on the long run. Similar to retirement strategies on 401k plans, bitcoin investors hoard the currency dormant until it reaches a specific exchange rate, which may take years to achieve. At this point in
time, being bitcoin a new concept of money and an emerging technology, both strategies are considerably risky\textsuperscript{19}. Bitcoin transactions are mostly unregulated and price swings can erase someone's portfolio in minutes. Other type of investors (e.g., venture capitalists) put their money in bitcoin but via proxy. Instead of buying the cryptocurrency directly, they invest with US dollars, euros or other currency in business projects run by professionals and specialists that support and promote (up to a point) the expansion of the bitcoin consumption network and community\textsuperscript{20}. Bitcoin miners, compared to speculators and investors, are the ones most integrated and actively participating in the harmonious operation of bitcoin. Miners are responsible for verifying bitcoin transactions between peers. Miners are rewarded with new “mined” bitcoins every time they solve the cryptographic algorithm, this solution packaged in a “block” [Fig. 15]. The goal is to solve the algorithm faster than other computers or “nodes” in the global network to win the new bitcoin. This “proof-of-work” requires enormous amounts of computer power and electricity, condition which has forced participants to form local and global “mining pools”\textsuperscript{21}, where they invest their money (fiat or bitcoins) and/or computer power, sharing the costs and profits accordingly. This is an
extraordinary example of how thousands of people, with a different cultural background, economic status, language, education, and location form a successful virtual community to achieve a collective goal. The “code” is conditioned to reduce the number of bitcoins rewarded to miners in half, approximately every four years. Some years from now, mining bitcoins will be a no-profit zone, situation that will raise the taboo question of transaction fees to execute the proof-of-work every time bitcoins are exchanged.

The second group is the service providers\textsuperscript{22} [Fig. 16 & 17], which are represented in 8 subgroups addressing different areas of the Bitcoin ecosystem. Subgroup one are bitcoin wallets, which just like cash wallets, bitcoins are stored temporarily during exchanges of currency using cryptographic public and private keys. We can consider a wallet's account number a hashed (i.e., derived) version of the public-key, which is used to receive BTCs. The private-key, on the other hand, is a “randomly generated string”\textsuperscript{23} used to spend bitcoins [Fig. 18]. If a private key is lost or stolen, the BTCs are unrecoverable, just like cash. There are virtual wallets, where the bitcoin private key is stored in the cloud\textsuperscript{24}; app wallets where bitcoins are stored in a phone's memory or computer's hard drive\textsuperscript{25}; and hard
wallets where bitcoins are stored in a portable device like a flash drive. Bitcoins can also be easily stored on a piece of paper, since “every bitcoin address is between 26 and 35 alphanumeric characters in length and can start with a 1 or a 3” (Prypto 2016:87).

The second subgroup is bitcoin storage, quite similar to wallets but targeted more to sophisticated users that demand “cold storage” security, or encrypted computer servers storing bitcoin's private keys never connected to the Internet. The third subgroup are bitcoin exchanges, where speculators around the world buy and sell bitcoins with the expectation to make a quick profit from price volatility relative to other currencies.

![Simplified Bitcoin Transaction Process Diagram](image_url)

**Figure 18: Simplified Bitcoin Transaction Process**
Diagrammatic interpretation by Villarreal, 2016.
The fourth subgroup are bitcoin payment processors, which are enterprises dedicated to provide the software needed for merchants to accept bitcoin as method of payment for commodities and services. Exchanges use them to accept other currencies and storage companies to give credit card like access to customer's bitcoin funds when making purchases. The fifth subgroup is the media, who through different means of communication spread the word of Bitcoin, promote its advantages and demystify misconceptions. Advocacy groups like the Bitcoin Foundation, bitcoin.org, and bitcoin wiki are three good examples, in addition to the dozens of statistical, analytical, mining, and independent news channels who champion the global usage of bitcoin. The sixth subgroup is financial services, catering business-to-business (B2B) transactions by providing the necessary software for their smooth operation. The seventh subgroup is developer tools, which are enterprises focused on the evolution of accessorrial software for bitcoin's expansion of user base and new applications. The final subgroup is the blockchain technology, which provides services that go beyond bitcoin. The application of this technology is to develop new specific-use cryptocurrencies or more efficient mediums of
financial exchange (though still in beta test), as in the case of *ethereum*\textsuperscript{34} and *ripple*\textsuperscript{35}.

**Bitcoin the Protocol**

Let’s open our discussion with a short quote by BTC core developer Jeff Garzik. He referred to bitcoin’s protocol as the “world’s first surviving digital organism” (Mross 2014), analog to cells in the human body. There are six basic elements that are easily identifiable and unique to the Bitcoin protocol [Fig. 11 & 19]. The protocol is the commands of instructions that rule the circulation of data between nodes in the network. Bitcoin is open source; anyone can collaborate in the continuous development of Bitcoin without the need to pay for licenses or permits, risking patent infringement. Open collaboration from a global base is not only richer in diversity and applications, but also cheaper. Bitcoin is network regulated, there is no need for “relying on trust”\textsuperscript{36} from a third party to safely complete an electronic currency transaction.
Bitcoin relies on cryptographic technology to achieve two revolutionary peculiarities in computer programming, the solution to the double-spending dilemma [Fig. 20] and the irreversibility of transactions. Any attempt of spending twice a bitcoin will be rejected by the network, keeping honesty separate from the subject. Once any number of bitcoins is transferred from one party to another, there is no way to retrieve the bitcoins back.
Today, banks, credit cards, and state agencies can seize financial assets from bank accounts and investment portfolios. This is not possible with bitcoin as long as the “private key” is not publicly exposed or subject to Internet hacking [Fig. 21]. The final element is Bitcoin's ledger system format (i.e., the blockchain), where bitcoins are publicly recorded for easy verification, and privately accounted for easy management and transfer between parties. Refer to Nakamoto (2008) and Antonopoulos (2014) for a technically detailed explanation of Bitcoin’s complex blockchain protocol operation.
Can we psychoanalytically relate Bitcoin's “code” to Lacan's “the big Other”?[^37] [Fig. 22] Can the “code” be Bentham's final vision of the panopticon?[^38] Is Bitcoin crypto-anarchism?[^39] The paradoxically materialized fantasy of libertarians, anarcho-capitalists, and anti-central banking advocates?[^40] There are several explicit and implicit messages in the Bitcoin protocol, whether used as medium of exchange, commodity, or currency.

There are two camps that define Bitcoin and bitcoin as “disruptive technology”[^41]: the transfer of trust from people to software and the total privatization of money issuance.

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[^37]: Can we psychoanalytically relate Bitcoin's “code” to Lacan's “the big Other”? [Fig. 22]
[^38]: Can the “code” be Bentham's final vision of the panopticon?
[^39]: Is Bitcoin crypto-anarchism?
[^40]: The paradoxically materialized fantasy of libertarians, anarcho-capitalists, and anti-central banking advocates.
[^41]: There are several explicit and implicit messages in the Bitcoin protocol, whether used as medium of exchange, commodity, or currency.
disenfranchised from debt and inflation (i.e., from corporate banks to private individuals).

![Diagram: Bitcoin as Lacan’s “the big Other”](image)

**Figure 22: Bitcoin as Lacan’s “the big Other”**  
Diagrammatic interpretation by Villarreal, 2016.

The potential ideological repercussions from this model to reach a global scope are already being watched, as several countries have adamantly banned the use of bitcoin and the fact that banks and even central banks are adopting blockchain technology to create their own cryptocurrencies (i.e., bitcoin knockoffs). Bitcoin’s peer-to-peer (P2P) economic model can bring the dominating ideology of centralized and hierarchical neoliberal capitalism to its knees. The ruling ideology has taken notice, and it does not like competition. For some believers, Bitcoin already achieved myth status. Michael
Caldwell, founder of popular and successful Casascius\textsuperscript{46} coins (metal based bitcoins), suggested that “cryptography can solve most of the social problems today” (Mross 2014). Bitcoin, denotatively speaking, may be a passing fashion for eccentric geeks and gamblers. Connotatively, for the first time in modern history, bitcoin can lead us to the tipping point (Gladwell 2002) for a global anti-fiat and anti-debt based monetary revolution\textsuperscript{47}.

Notes

2 For a comprehensive list of Bitcoin communities, visit: bitcoin.org/en/community
6 A concoction of cybernetics and Baudrillard's "hyperreality". Term operationalized by Villarreal, 2016.
7 For a list of current cryptocurrencies, visit: www.cryptocoincharts.info/coins/info
8 See BTC total market capitalization, Fig. 62, Ch. 6.
9 See BTC total daily transactions, Fig.63, Ch. 6.
10 Online: Connected to a computer, a computer network, or the Internet. Done over the Internet. Retrieved June 9, 2016 (www.merriam-webster.com/dictionary/online)
12 Formula: 1 Satoshi = 1/100 million bitcoin units (i.e., 1:0.00000001). Retrieved June 9, 2016 (en.bitcoin.it/wiki/Satoshi_(unit))
13 Mining: The process of adding transaction records to Bitcoin's public ledger of past transactions. Also, the mechanism used to introduce bitcoins into the system. Miners are paid any transaction fees as well as a “subsidy” of newly created coins. Retrieved June 9, 2016 (en.bitcoin.it/wiki/Mining)


17 Volatility: A statistical measure of the dispersion of returns for a given security or market index. Volatility can either be measured by using the standard deviation or variance between return from that same security or market index. Commonly, the higher the volatility, the riskier the security. Retrieved June 9, 2016 (www.investopedia.com/terms/v/volatility.asp)

18 E.g., Tradewave is a platform that lets users customize automated bitcoin trading strategies using sophisticated algorithms. Retrieved June 9, 2016 (tradewave.net/help/trading)


20 E.g., BitAngels is the world's first distributed veteran entrepreneur and angel investor group, focused on accelerating the digital currency eco-system. Retrieved June 9, 2016 (www.bitangels.co)

21 For bitcoin's hashrate distribution stats amongst the largest mining pools in the world, visit: blockchain.info/pools


25 Ibid.

26 Ibid.

27 Ibid.

28 For an extensive list of bitcoin exchanges, visit: en.bitcoin.it/wiki/Trading_bitcoins For a detailed list of bitcoin payment processors, visit: en.bitcoin.it/wiki/Merchant_Howto

29 E.g.: Bitcoin Magazine, yBitcoin, coindesk.com, cryptocoinsnews.com, reddit.com/r/bitcoin


Ethereum: A decentralized blockchain platform for applications that run exactly as programmed without any chance of fraud, censorship or third-party interference. Retrieved June 9, 2016 (www.ethereum.org)

Ripple: A distributed financial technology that allows banks around the world to directly transact with each other without the need for a central counter-party or correspondent. Retrieved June 9, 2016 (ripple.com)


SECTION THREE - THEORY

CHAPTER 3 LAYER I

SOCIAL EXCHANGE THEORY (SExT): BITCOIN AS MONEY

Social exchange has its roots grounded on a mix of theories, which may contradict with one another. It is based on social behaviorism (G.H. Mead), utilitarianism (J.S. Mill), and functionalism (E. Durkheim) [Fig. 23].

![Figure 23: Intellectual Roots of Social Exchange Theory](source)


Social exchange interprets social behavior from an optimization bifocal lens: the striving towards reward maximization, and the evasion or minimization of costs (or retribution) [Fig. 24]. The basic unit of analysis is not the subject or actor, but the relationship between them. Thus,
interaction is the necessary vehicle to complete the transaction cycle and satisfy each actor's needs.

Figure 24: Social Behavior Tendency Towards Optimization

Cook (1992) posits that temporal structural change is determined by an actor's status and power relations, not within their group, but in dissimilar kinds of social structures [Fig. 25].

Figure 25: Temporal Structural Change

Social exchange main topics deal with nature and effects of actor's interaction, and the distribution of power within a social structure [Fig. 26]. Hence, individual actions are guided by socially determined values.
We will now concentrate on analyzing bitcoin from: Homans's (1958 & 1974) social psychology fundamental five behavioral propositions, Blau's institutional macrostructure (1964), and Emerson's "power-dependence" theory (1962). All three theories fit properly when analyzing bitcoin because, albeit global in scope, its protocol is based as a P2P medium of exchange, i.e., on microsociological interactions. Bitcoin’s P2P interaction
defies financial power structures by redefining value contrary to the ruling debt-based monetary institutions (e.g., central and private bank oligarchies and the state).

Homans's basic tenet proposes that “behavior is a function of its payoffs” (Cook 1992:607). Analogous to Rational Choice Theory (RCT), behavior responds to the consequential “retribution or reward” (i.e., incentives) of a situation. Homans's five behavioral propositions comprise: success, stimulus, values, deprivation-satiation, and “emotive”\(^1\). See Figure 28 below for a visual exposition of Homans’s propositions using bitcoin as central unit of analysis.
The propositions and ideas comprising Homans's system matured in what we now call Social Exchange Theory (Cook 1992). Social exchange theory can be used to explain a wide range of behavioral micro-interactions like: cooperation, conformity and competition, structures (sentiment and interaction), status and influence, satisfaction and productivity, leadership, distributive justice, stratification emergence, and exercise (power and authority) [Fig. 29].
We will now evaluate in detail each proposition using bitcoin as the payoff (outcome) and incentive (income) for exchange behavior.

a) Success: Asserts that as reward increases for performing 'x' activity, the probability that 'x' activity will be repeated augments in a similar fashion. We can think of two potential scenarios, earning a quick profit while trading bitcoin's price volatility or completing a safe exchange of bitcoins for some good or service. The successes of one or both of these performances will incentivize the actor to engage in similar behavior in the future.
b) Stimulus: States that equivalent situational or environmental conditions will encourage behavior that has been previously awarded in such conditions, therefore enabling inductive\(^2\) behavioral reactions to novel sensorial circumstances. An increasing number of bitcoin users stimulate more of its use, creating a network effect\(^3\), thus expanding rapidly in an exponential way. In a more subjective form, media stories of bitcoin riches\(^4\) and status, or acceptance into the Bitcoin community\(^5\) are a positive stimulus for repetitive behavior, as experienced with other niche groups or activities\(^6\).

c) Value: Stipulates that the higher the outcomes value from an actor's performance, the higher the probability for the performance to occur. For a consumer, bitcoin's pseudo-anonymity and coded safety measures can incentivize its use. For a trader, bitcoin's price fluctuations\(^7\) have value as future profits, which does entice to more trading of bitcoins. For a merchant, bitcoin's decentralized protocol\(^8\) has value in terms of minimizing transaction costs and as hedge against charge-backs, incentivizing future continuous use. According to Cook (1992:606), value “is qualified” by the following proposition.

d) Deprivation-satiation: Homans's instituted a radical concept for mainstream sociology, the microeconomic concept of
Diminishing Marginal Utility (DMU). DMU postulates that the higher the rate an actor receives an outcome for a particular performance, the less value any extra unit of that outcome will provide. This results in a declining gradient “actor performance” curve, where value marginally decrease relative to each additional outcome-unit increase [Fig. 30]. DMU does not apply to “generalized rewards” (Cook 1992:606), as in the case of love and money (which are value subjective), or when deprivation-satiation occurs at the curve’s “bliss point”\(^9\).

![Figure 30: Social Exchange DMU Actor-Performance Curve](image)

*Figure 30: Social Exchange DMU Actor-Performance Curve*


In the case of bitcoin, hoarding means less volatility, thus further causing less profits from speculative trading, reaching a satiation point from a trading perspective (bitcoin as commodity). On the other hand, more bitcoin users mean more
value for merchants and consumers, extending the satiation point on the curve much forward (bitcoin as M/E)\textsuperscript{10}. When analyzed as objectified labor\textsuperscript{11}, bitcoin presents a paradoxical bifurcation. The less bitcoins (BTCs) are rewarded from mining (labor surplus), the less transactions to be processed in the blockchain, reaching a satiation point sooner and negatively affecting the two cases just explained. Therefore, less mining rewards means more transaction fees, disincentivizing transactions by both consumers and traders.

\textbf{e) Emotive:} Divided in two parts and based on how actors emotionally react to different outcome events. According to Miller & Dollard (1941, Cook 1992:606) “frustration-aggression hypothesis”, people who are “under-rewarded” are assumed to become angry and behave violently. Contrarily, people who are “over-rewarded” or are waved from anticipated punishment are assumed to be joyful and behave agreeably. An unexpectedly large profitable trade, increased status within the ecosystem, or evading arrest from the law are a few examples of over-rewarded emotions exchanging bitcoins, incentivizing a positive behavior in bitcoin related performances. In contrast, a large loss of money speculating on cryptocurrencies, stolen BTCs from a face to face transaction, or a hacked wallet\textsuperscript{12} will incite under-
rewarded emotions, stimulating anger towards Bitcoin, whether objectified as money, medium of exchange, or community.

Blau, who referred to Homans's model as “reductionist”, focused on the social structures instead of the social subunits (Cook 1992:608) [Fig. 31].

Macrostructures have “emergent properties”, and the dynamics of structural change are forged from the dialectic struggle of major social forces, such as power, authority, resistance, and legitimation [Fig. 32], as well as integration vs. differentiation, and organization vs. opposition [Fig. 33].
Blau's structure of social associations is formed from two social exchange processes, positive and negative. Positive processes are group formation, cohesion, and social integration.
Negative processes are opposition, conflict, and dissolution [Fig. 34]. They are antagonistic in nature, with diametrically opposed agendas of interest.

We will now explore Blau's institutionalized systems of exchange from a bitcoin perspective [Fig. 35]. Authority and power is represented in four main institutions: financial, the state, economic, and informational. The financial arm is composed of commercial, merchant, and investment banks. They have a clutching interest in maintaining the status quo by: controlling the issuance of credit money, mediating monetary transactions between parties, centralizing savings, physically restricting account assets access, and supervising every monetary transaction. The state arm in the case of the US (the
Congress, the Department of Justice\textsuperscript{15}, and the Department of the Treasury\textsuperscript{16}, is practically obliged to enforce laws against anything threatening the current modus operandi of credit issued money and income tax collection. Ironically, this socially antagonistic and enervating effort is used to pay for debts incurred by the federal government from private banks\textsuperscript{17}.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure35.png}
\caption{Blau’s Institutionalized Systems of Exchange & Bitcoin}
\footnotesize{Source: Cook, 1992. Diagrammatic interpretation by Villarreal, 2016.}
\end{figure}

The economic arm belongs to the fiat money behemoth, the Church of Mammon\textsuperscript{18} or the central bank institution. Worldwide, central banks (e.g., BIS, US FRS, BoE, CBE, BoJ) have the reigns of
monetary policy, which is basically a proxy for whatever private banks and neoliberal corporate interests have in their agendas. Central banks, having monopoly power over the issuance of legal tender (fiat) money, are much interested in maintaining that supremacy. Any alternative currency, in the long run, can be a potential menace and will be neutralized or absorbed sooner or later\(^\text{19}\). The last “authority and power” arm is the informational, comprised of mainstream media and academia. From the domination exercised on them, media and academia usually comply with the demands of moneyed interests (who’s funding what), maintaining and perpetuating ideological conditioning (i.e., false consciousness) over the population\(^\text{20}\), where the current debt based money system is the absolute and infallible choice for human prosperity and freedom\(^\text{21}\).

Conflict within and without the institutional structures against what Bitcoin represents can be observed in several examples. The money monopoly of issuance from central and private banks, direct control of inflation via FOMC interest rates (in the case of the Fed) and indirect via private banks oversupply of consumer credit, is in diametrical opposition with Bitcoin's protocol of controlled issuance via mining processing, and the fact that no centralized institution can claim authority
to issue *debt based bitcoins*, since the protocol was originally designed against any potential abuse of trust (e.g., emergency QE). Tax evasion, a principal concern to the state in foreign affairs but not as eager locally\(^22\), is a clear reason for conflict inasmuch as bitcoin can be used as a mechanism to evade taxes\(^23\). Bitcoin's pseudo-anonymity and spatiotemporal quality to transport and exchange anywhere in the world with (or without) an internet connection, makes the work of tracking down *tax evasion criminals* not only strenuous, but a priority before it becomes unmanageable. For example, taxes are of high importance to federal creditors (i.e., banks), not for legal or moralistic motives, but because the $400 billion dollars a year interest payment the US federal government owes has to come from somewhere\(^24\) (FRED 2015). The *little guy* (i.e., the poor, the ignoramus, the disadvantaged, the isolated) is usually the first casualty of capitalism’s financial misbehaving. The current profit mechanism from electronic money processing by financial firms is in direct conflict with Bitcoin’s protocol, which reduces the transaction costs of exchanging money to a nominal fraction of current standard practices. By circumventing the middleman, buyers and sellers can close a deal without the additional and unnecessary *nickel-and-diming* of banks as
intermediaries. The situation has reached such a critical point that financial institutions themselves are sponsoring *ethereum*, a new decentralized and programmable cryptocurrency with its proprietary blockchain, to directly compete against bitcoin. Bitcoin's open source protocol has embedded in it a sense of agency; coders as well as consumers are in conflict with the calcified and monopolized monetary power structures (i.e., central and private banks), whom have defined what is money, how much is worth, how it operates, and who has technical ownership over it (as they have for several centuries).

Bitcoin has evident emergent characteristics, which can become legitimized vehicles of change among social institutions. First, the global community of BTC coders, merchants, traders, miners, and consumers, with an aggregate purchasing power of over US $6.5 billion and roughly 6.8 million wallets, have the potential power, working in unison, to beget change in the current neoliberal economic and political global order. As the aggregate number of users and transactions increase, the monetary policy power (issuance and interest rates) will continue shifting from central and private for-profit banks to consumers (private citizens). Large and small underdeveloped states could potentially regain monetary sovereignty if they
decide to break away from global debt servitude\textsuperscript{28} and adopt bitcoin (or some other decentralized cryptocurrency) as official currency. Another relevant aspect of the emergent power of bitcoin is the fostering of innovative blockchain technologies, cryptocurrencies, and open source apps, not only within the finance industry, but in health, education, and business as well\textsuperscript{29}. After bitcoin’s introduction, more than 3000 new cryptocurrencies have been released to circulation\textsuperscript{30}. This caused a mushrooming effect in global cryptocurrency transactions and interest in developing novel applications of the protocol, all without relying on parasitical third party intermediaries. Sub-units working by themselves could have accomplished none of these; it was the emergent power of the Bitcoin ecosystem the one responsible.

We will now move to the synthesis of the dialectical evolution of Social Exchange Theory [Fig. 36], Emerson's reformulated “power-dependence” theory\textsuperscript{31}. His concern, different from the standardized economic approach to exchange from the perspective of commodities, was to focus on the exchange and interaction between actors.
Based on Emerson’s theory, we can derive the following formulae:

I. \( f(P) = D(x^y) \)

II. \( f(Dx) = V(ry) - A(rz) \)

Where:

- \( P = \text{power} \)
- \( x = \text{actor 'x'} \)
- \( y = \text{actor 'y'} \)
- \( ^{\wedge} = \text{allocates upon} \)
- \( D = \text{dependence} \)
- \( V = \text{value} \)
- \( r = \text{resources} \)
- \( ry = \text{controlled resources, actor 'y'} \)
- \( A = \text{availability} \)
- \( z = \text{alternate source, actor 'z'} \)
- \( rz = \text{controlled resources, actor 'z'} \)
- \( RA = \text{resource availability} \)
- \( RV = \text{resource value} \)

From formula I, we can deduce that power is a function of the relational dependence of actor 'x' allocates upon actor 'y'. Subsequently in formula II, dependence itself is a function of the value actor 'x' allocates upon the resources controlled by actor 'y', in addition to the availability of these same
resources from an alternate source, or actor 'z'. Thus, the larger the availability of 'r' from actor 'z' (or additional actors), the smaller actor's 'x' dependence upon actor 'y'. To Emerson, social structure and structural change were the principal dependent variables in the theoretical construction of social exchange (Cook 1992).

Using simple microeconomic dual axes graphs, we can visually interpret the interaction between the actors (or parties) involved in the relational exchange process [Fig. 37].

**Figure 37: Emerson’s Power–Dependence Theory**
On graph 1, a direct (positive) relationship exists between power and dependence, i.e., as dependence of actor 'x' increases upon actor 'y', actor 'y' power over 'x' increases accordingly (i.e., power imbalance). On graph 2, resource value has a direct (positive) relationship with dependence, i.e., as the value actor 'x' allocates on resource 'r' controlled by actor 'y', dependence of 'x' upon 'y' increases correspondingly. Finally, on graph 3, resource availability shows an inverse (negative) relationship on dependence, i.e., as the availability of resource 'r' increases via the intervention of actor 'z', the dependence of actor 'x' upon 'y' decreases. Simultaneously though, actor's 'x' dependence upon 'z' increases in accordance, thus the power-dependence cycle repeating itself in a mathematical lemniscate of asymmetrical exchange.

In the case of bitcoin, as our dependence upon banks for the issuance of money and control of monetary policy in parallel, their control over us increases respectively. As we maintain the status quo of value, for example the US dollar, at the same rate as we do now, since we do not control the manufacturing of money, we will continue ad infinitum dependent on banks for performing any sort of money based financial transaction within the legal framework of neoliberal economics. However, if an
alternate source (e.g., S. Nakamoto) comes to the fore with an additional resource (BTC) currently controlled by the banks (fiat money), our dependence upon them will decline proportionally. If we plot both RA and RV graphs overlapping with each other, an equilibrium point is reached; RA continues increasing while RV continues decreasing until achieving the point of optimization dependence. Therefore, we can agree with Cook (1987:176) in that “the structure of exchange relations among power subordinates may be critical to their success in mobilizing coalitions of ‘weak against string’”. Theoretically, sustained bitcoin expansion (network effect) has the potential to neutralize the power of the international banking cartel over the world, attaining unprecedented structural change without a single bullet shot. The global spread of bitcoin has embedded in its code the seeds of a liquid revolution.

Notes

1 Homans referred to this proposition as “people's emotional reaction to different reward situations”, i.e., more or less than expected. Homans employed no specific terminology as he did with the other four propositions. Term operationalized by Villarreal, 2016.
2 From particular to universal.
Network Effect: A phenomenon whereby a good or service becomes more valuable when more people use it. The Internet is a good example. Initially, there were few users of the Internet, and it was of relatively little value to anyone outside of the military and a few research scientists. As more users gained access to the Internet, however, there were more and more websites to visit and more people to communicate with. The Internet became extremely valuable to its users. Retrieved June 10, 2016 (www.investopedia.com/terms/n/network-effect.asp)


For an extensive list of Bitcoin communities, visit: bitcoin.org/en/community


For BTC/USD live price-charts, visit: bitcoinwisdom.com

No need to depend on third parties, i.e., banks or other financial clearing services.

Bliss point: A consumption point in the utility curve where an additional unit would not provide the same level of satisfaction as the previous unit, i.e., the beginning point of diminishing marginal utility.

M/E: Medium of exchange.


Emergent Properties: A property which a collection or complex system has, but which the individual members do not have. A failure to realize that a property is emergent, or supervenient, leads to the fallacy of division. Sinjab, 2013. ResearchGate. Retrieved June 10, 2016 (www.researchgate.net/post/What_is_your_definition_ofEmergent_Properties)


14. For current US Federal Government Interest Expense and Average Interest Rate charts, visit: www.treasurydirect.gov/govt/charts/charts_expense.htm

15. Open Source Software (OSS): Software that can be freely use, changed, and shared (in modified or unmodified form) by anyone. OSS is made by many people, and distributed under licenses that comply with the Open Source Definition. Retrieved June 10, 2016 (https://opensource.org)


17. Actual total number of unique bitcoin users may be smaller. Retrieved on May 6, 2016 (blockchainbdgpzk.onion/charts/my-wallet-n-users)


20. For a list of current cryptocurrencies, visit: www.cryptocoincharts.info/coins/info


22. The horizontal number eight form (algebraic geometry), symbolically representing infinity ($\infty$).

“How should the world which had enthroned money as its God aspire to understand it?”

- Franz Mehring

CHAPTER 4 LAYER II

MARXIAN DIALECTICS

Labor Theory of Value: Bitcoin as Commodity Fetishism

Our discussion begins with a historical synopsis of Marx’s theoretical developments in the complex subjects of money, value, commodity, and labor\(^2\) [Fig. 38], and how they relate to bitcoin. Albeit neither a commodity nor a nominalist theory of money, Marx's theory of money leans towards the metallist school, i.e., money must have “use-value” and intrinsic value. He adamantly opposed the nominalist theory of money though, where money is a purely semiotic social construct, a fiat IOU with no intrinsic value. For the nth occasion, Marx must be rolling in his grave, since most modern currencies are worthless \textit{nominalist} money backed by nothing but the \textit{trust} on their governments' credit worthiness (e.g., US dollar, euro, Japanese yen, British pound, and Swiss franc)\(^3\).
Marx did, as Aristotle two millennia prior, view money as an efficient medium of exchange for goods and services between parties, but advised against “mistaking sign money for wealth”\(^4\).

To understand Marx's conceptualization of money, we need to delve into the concept of abstract labor, thus into his Labor Theory of Value (LTV). Nelson (1999) eloquently explains, “for Marx, 'value' is labor objectified and alienated in commodities, and appears in circulation as 'exchange-value', which becomes 'independent' in money, the 'value-form'. Money is necessary for commodity exchange and therefore also for commodity production”\(^5\) [Fig. 39]. The commodity, for Marx, is fathomed metaphysically as “alienated human being”, i.e., labor. He prioritizes money as a system of value, thus his commodity theory of money is more accurately denoted as the Theory of the Money Commodity (TMC).
In other words, commodity exchange and commodity production are both a function of money.

There is much wisdom when Marx said that “trade is alienation in practice, under the alien and uncontrollable rule of money. Money is power, God, the epitome of practical alienation”\(^6\). We could make the analogy that money is to trade, as god is to religion, hence money as value materialized in alienated labor is a conception linked to talents and energy, known in socioeconomics as human capital\(^7\). Human qualities are objectified in money, which equates to the god of “practical needs and self-interest”, a “jealous” god who is unlimited in scope and the benchmark “supreme value” of every commodity, animated or not [Fig. 40].
The cycle of reification begins with human capabilities and creations, which through the process of alienating labor, are objectified in commodities. These commodities are traded in capitalistic market economies for money. Ergo, money being the value-form *par excellence* with supernatural and superhuman qualities, is reified in the psyche of individuals as the universal ruling authority, completing and perpetuating the marketplace trade cycle [Fig. 41]. Money equates the mind and soul of the community, becoming by default the ultimate potentate of human action.
Money, as means of exchange, is the only commodity that is both a “general”\textsuperscript{8} commodity and a “particular”\textsuperscript{9} commodity at the same time. Money is dialectical and antagonistic in its conceptual composition of the “idea” or \textit{idealogical theory} contra its exchange-value or the commodity; the immaterial versus the material synthesized in money as money. Commodity fetishism occurs at the point of “confusion” between material “use-value” and socially necessary labor time “exchange-value” [Fig. 42].

\textbf{Figure 42: Commodity Fetishism Origins}

In the capitalistic market place, social transactions between people become social relations between things [Fig. 43], thus fetishizing commodities (i.e., objectified labor).
Gold has a particular role in Marx's theory of the money commodity. It is the "veritable god", objective, material, and independent [Fig. 44].

Marx’s gold is endowed with dual-value. As “particular” commodity, it is not money, only a commodity with material
utility (i.e., use-value). As “universal” commodity though, gold performs as money, that is, exchange-value [Fig. 45].

**Figure 45: Marx’s Money Commodity Dual-Value**

In this gold-as-money form, gold is the standard of price (spatiotemporal metal), whose value fluctuates in the market, and is conditioned as measure of value relative to the labor time required to “produce” this gold [Fig. 46].

**Figure 46: Marx’s Gold as Money**

Therefore, when normalized use-value and exchange-value run in parallel inside of market circulation, a special money commodity like gold is employed. Non-money commodities do not possess this ontological quality; they can have either use-value or exchange-value, but never both at the same time [Fig. 47 & 48].
It is relevant to acknowledge that in Marx's theory, currency and money are not equivalents. Currency belongs to the realm of the Symbol Theory of Money, that is, money with no intrinsic value, anchored in the minds of its users semiotically\(^\text{10}\) with no physical representation. Money, on the other hand, fits into the Theory of the Money Commodity, where money is an “individual” commodity in which all others are
compared against to, and value derives from its embodiment of human labor, i.e., the Labor Theory of Value [Fig. 49].

Figure 49: Marx’s Currency vs. Money

In the reification process of pricing, commodities are exchanged as imaginary gold, gold is exchanged as imaginary money, and money is exchanged as “imaginary god”\textsuperscript{11} [Fig. 50]. For Marx, the total quantity of money (TQM) required for circulation in the market economy is grounded on the assumption that prices and values are predetermined to circulation: \( f(QM_c) = P \textsuperscript{12} \). In 20th century applied pseudo-scientific socialism (e.g., USSR), paper money had a bizarre role in the economy. Its value was “static”, cash use was banned except to pay for wages/basic consumer goods, and the state-run central bank (Gosbank) had a passive monopoly role\textsuperscript{13}. Instead, it was the central production
planning board the institution who ruled monetary policy, and subsequently, ruined the soviet economy.

![Diagram](image_url)

**Figure 50: Pricing Reification Process**

We can conclude that in the capitalistic marketplace, commodity circulation (with money) flows from the buyer trading exchange-value with the seller, while the seller trades use-value with the buyer [Fig. 51].

![Diagram](image_url)

**Figure 51: Capitalistic Marketplace Commodity Circulation**
So, where do we fit bitcoin in Marx's complex theory of money? First, bitcoin as cryptocurrency would not qualify as money. Bitcoin's value is derived exclusively from its emergent symbolic objectification as money, price is discovered by the laws of supply and demand. With neither physical nor legal representation, intrinsic value is a mathematical improbability. Second, alas disqualified as money from its lack of materiality, it does qualify as medium of exchange in the nominalist school. Bitcoin is an optimal medium of exchange between parties, where price can be ignored since the purpose of the trade are services or commodities, not money for money. Consumers and merchants are the biggest potential winners (e.g., C-M-C)\textsuperscript{14}; traders (i.e., money merchants and speculators) interests are diametrically opposed. They are only concerned in the profit from the trade itself, i.e., the exchange of cheap BTCs for more expensive BTCs (e.g., M-C-M)\textsuperscript{15}, or vice versa using complex trading strategies and derivatives (e.g., margin, shorting, futures, and options) [Fig. 52].

Finally, can we consider bitcoin as alienated objectified labor? Bitcoin is metaphorically mined into existence via the public blockchain, and from the protocol’s instruction as means of payment to the network’s working nodes.
Consequently, in contradiction to Marx's own rule for what a commodity requires to qualify as money, bitcoin's technological immateriality is not a constraint but an asset. Each bitcoin under Marx's Labor Theory of Value indeed has exchange-value due to its emanation from human labor. Bitcoins are immaterially objectified in hyperreality, in other words, they are the “reality of the virtual” (Zizek 2004), the first non-sensorium real money in recorded human history. Bitcoin may not have intrinsic material utility since it only exists in the cloud, but still paradoxically qualifies for both use-value when sellers trade commodities for bitcoin, and exchange-value when buyers trade bitcoin for commodities. Bitcoin’s commodity circulation cycle is efficiently performed as with any other standardized money currently used in capitalism (e.g., paper bank notes, electronic credit dollars, gold contracts,
government bonds). We can thus conclude that Bitcoin is the 21st century epitome of commodity fetishism. Social relations are not anymore between things with spatiotemporal identities, but boundless spectral bits and bytes.

**Social Conflict Theory: Bitcoin as Antithesis**

Evident from Marx's earlier works\(^1\), a definite class perspective develops in the relationship between the two critical actors in the capitalistic market cycle, the (proletarian) consumer and the capitalist. This relationship is mediated, perpetuated, and catalyzed via money. For Marx, it was very clear that money has always been a tool of control by the ruling class, and that “the monetary system is based on class contradictions”\(^2\). Marx realized that money has the standardizing attribute to level (i.e., equalizer of human worth) and subsequently disguise class differences, while representing simultaneously the “supreme expression of class contradiction” in the way money is unevenly distributed across society\(^3\). Consumption from the proletariat becomes a function of the level of wages and commodity availability (compare to Emerson’s power-dependence theory). Thus, at first glance workers are
metaphorically “free to choose” as monetarist Milton Friedman (1979) adage goes. In practice, the lack of control over salaries and what, where, and where commodities are produced, are empirical constraints on the workers’ quality and quantity of consumption, thereby their standard of living.

Marx insight explicitly presents how qualitative lifestyle variances are decided and governed by quantitative variances in money affluence. Because workers are paid a wage, distinctions in a money based capitalist system “blurs the class character” (Nelson 1999) of the link between worker and capitalist, concealing its exploitative relationship based on monetary profit (i.e., surplus-value)\textsuperscript{21}. Ergo, money fashions the likelihood for “an absolute division of labor”, that is, the sale of “labor-power” for money, hence money sold as capital\textsuperscript{22} [Fig. 53].
Capital and wage labor are “developed exchange-value”, money emerges as “its incarnation”\textsuperscript{23} [Fig. 54].

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\textbf{Figure 53: Money Surplus and the Division of Labor}  

\textbf{Figure 54: Exchange-Value Stages of Development}  
We will now analyze bitcoin from a two-prong social conflict flowchart [Fig. 55]. In prong 1, we have bitcoin as embodied capitalist money, the thesis. Bitcoin’s digital form, whether intended or not, encourages a shift to a cash-less economy. As expected, the ruling monetary authorities rejoice on the idea. In a market society\textsuperscript{24}, where banks (or the government) as third party intermediators control every single electronic money transaction, the sovereignty of individuals over their money can be technically extinguished\textsuperscript{25} at an instant. With physical cash, money can be safely stored outside of the banking system, either as bank notes or as other form of value (e.g., gold coins or ingots). In electronic form, this personal agency does not exist. The moment trust is broken between the individual and the monetary institution, possession or even ownership of the electronic money could potentially disappear into oblivion.
Figure 55: Bitcoin's Antagonistic Monetary Qualities
Diagrammatic interpretation by Villarreal, 2016.

Albeit a hyperreal commodity created from the labor of nodes in the global network, bitcoin maintains and thus perpetuate capitalistic relations of inequality. BTCs can be stockpiled just as paper money or gold, and ownership is seriously conditioned. To buy bitcoins as money, one must possess other currencies in the first place to pay for them (e.g., dollars, euros, renminbi). The proletariat, in the new normal the precariat\(^{26}\), with limited or non-existent discretionary income,
is systematically marginalized from participating in the bitcoin ecosystem. This money-affluence marginalization runs in parallel with access to technology, due to the fact that a computer (or similar device) and Internet service are necessary conditions to partake in the bitcoin ecosystem. Lastly, we are confronted with the inescapable information asymmetry\textsuperscript{27}. Bitcoin has been used for financial fraud\textsuperscript{28} against unsuspecting investors, as well as sophisticated trading opportunities (e.g., arbitrage, price volatility) not available to most users. Linguistically, a language hegemony (e.g., English, German, or Chinese) creates an invisible barrier between the bitcoin ecosystem and the rest of the world’s population.

In prong 2, we have bitcoin as the antithesis of capitalist money. First, bitcoin is decentralized. Trust is removed from the global system of economic actors, embedded in the code itself. This autonomy feeds in its quasi-anonymity, which reinforces reciprocally trust-decentralization. Second, as medium of exchange, bitcoin runs in a contrarian paradox to fiat credit money. Irrelevant from the lack of intrinsic material value (use-value), bitcoin’s issuance is not controlled by fractional reserve lending, thus dampening the fundamental requirement for capitalism to grow, i.e., perpetual credit
expansion until the system implodes (e.g., the great depression of 1931 and great recession of 2008)\textsuperscript{29}. Third, bitcoin can be an efficient vehicle to evade paying government taxes. In the case of the US, tax evasion via bitcoin is anti-IRS, which is anti-Treasury, and finally anti-banking. As explained before, due to bitcoin's non-credit based introduction to the marketplace, it is by default anti-banking. Bitcoin caps credit swelling from its protocol, therefore eliminating debt bondage from the economic system, which runs contrary to contemporary capitalism’s “financialization of the world” (Lapavistas 2014) and the “making of the indebted man” (Lazzarato 2012). Fourth, bitcoin's horizontal and power-leveling ideology flows as anti-central banking. Its open source protocol is democratic, antipodal to central banking autocratic (vertical) monetary policy. Bitcoin's issuance is self-governing, the code and nodes control without hidden agendas or conflicting interests (up to now) how many coins to mine, and mining is open to whomever is willing and capable to do so\textsuperscript{30}. Central banking is managed in secret\textsuperscript{31}; life changing deals and monetary policy issues are decided behind closed doors. The sovereign citizen has neither voice nor vote in matters concerning how much new money will be
introduced into the economy, by which agencies or institutions, for how long, and at what interest rate.

Bitcoin may not be a panacea to the alienating antagonisms intrinsic to money, much less to the operational deficiencies and vices of capitalism as a system. Nevertheless, bitcoin certainly is a powerful tool in the arsenal against monopolistic control of the means of production, the division of labor, and the imposition of artificial scarcity from chimerical for-profit corporate banks’ and government chartered (though private) central banks’ issued money.

Notes

7 Human Capital: A measure of the economic value of an employee’s skill set. This measure builds on the basic production input of labor measure where all labor is thought to be equal. The concept of human capital recognizes that not all labor is equal and that the quality of employees can be improved by investing in them. The education, experience and abilities of an employee have an economic value for employers and for the economy as a whole. Retrieved June 10, 2016 (www.investopedia.com/terms/h/humancapital.asp)

Cf. Maurer et al., 2013. "When perhaps the real problem is money itself!": the practical materiality of Bitcoin. Social Semiotics, 23(2), 261-277.

Analogy operationalized by Villarreal, 2016.


Cf. Maurer et al., 2013. "When perhaps the real problem is money itself!": the practical materiality of Bitcoin. Social Semiotics, 23(2), 261-277.

Beyond relying on the (traditionally recognized) five human senses for achieving empirical validity. Term operationalized by Villarreal, 2016.


"Surplus-value is the profit extracted by the capitalist from the worker as the difference between what the proletarian gets paid for the work performed relative to the revenue generated from that objectified work when sold in the market". Marx, 'Reflections' in Marx and Engels, Collected Works, Volume 10:589-92, Marx and Engels: 1849-51.

Ibid.


Information asymmetry: The uneven distribution of information among the parties involved in trade, creating an unfair advantage to the possessor of the largest scope of information. Term operationalized by Villarreal, 2016.


For most people, mining bitcoins today is an expensive and not very lucrative business endeavor. On the other hand, the barriers of entry for establishing an international bank are exponentially more complex and expensive. To learn more about bitcoin mining, visit: www.bitcoinmining.com. Cf. Schneider, 1998. How to Own Your Own Private International Bank: For Profit, Privacy, and Tax Protection.


Quantitative Easing (QE): An unconventional monetary policy in which a central bank purchases government securities or other securities from the market in order to lower interest rates and increase the money supply. QE increases the money supply by flooding financial institutions with capital in an effort to promote increased lending and liquidity. QE is considered when short-term interest rates are at or approaching zero, and does not involve the printing of new banknotes. Retrieved June 10, 2016 (www.investopedia.com/terms/q/quantitative-easing.asp)


Federal Open Market Committee (FOMC): The branch of the Federal Reserve Board that determines the direction of US monetary policy. The FOMC meets eight times per year to set key interest rates, such as the discount rate, and to decide whether to increase or decrease the money supply, which the Fed does by buying and selling government securities. All FOMC meetings are secret and subject to much speculation in Wall Street. Retrieved June 10, 2016 (www.investopedia.com/terms/f/fomc.asp)
CHAPTER 5 LAYER III
SOCIAL CONSTRUCTION THEORY: BITCOIN AS INSTITUTION

We will now exercise Berger and Luckmann (1966) treatise on the sociology of knowledge and use their theoretical outline as lens to explore bitcoin's social essence as objective reality [Fig. 56].

Figure 56: Social Construction of Reality Outline
Let us begin by operationalizing several imperative concepts implicit in the theory's basic tenets. The goal of the sociology of knowledge is to analyze the processes in which society constructs reality. Berger and Luckmann (1966) define reality, without relying on philosophical or semantic entanglements, “as a quality appertaining to phenomena that we recognize as having a being independent of our own volition”, and knowledge “as the certainty that phenomena are real and that they possess specific characteristics”\(^1\). Sociologically, the concern of what is “reality” and what is “knowledge” is warranted by the actuality of their social relativity, i.e., how different societies deal with empirical “knowledge” and the processes of how this knowledge becomes taken-for-granted social “reality”, or reality sui generis\(^2\). Thus, the sociology of knowledge premise deals with the social construction of reality, or the sociology of truth\(^3\).

The Foundations of Knowledge in Everyday Life

The Reality of Everyday Life

Quotidian life is defined as a subjective experience (i.e., reality) understood by individuals and subjectively significant
to them as a rational and logical world. The foundations of knowledge in quotidian life are to be interpreted phenomenologically, that is as “empirical” but not “scientific” due to its pre- and quasi-scientific connotation of everyday reality. Albeit individuals engage in many different realities, the reality of quotidian life trumps every other as paramount reality. This prime everyday reality presents itself as objectified, a previous order of objects assigned as objects before the individual's arrival or existence. Quotidian life is experienced beyond the “here and now” through fluctuating levels of spatiotemporal proximity and distantness. This everyday life reality is intersubjective, it not only belongs to the one individual, but it is shared with a collection of individuals who deterministically second this quotidian life with unceasing interaction. Accordingly, commonsense knowledge is as well intersubjective, reaffirming jointly the admittance of everyday life as taken for granted reality. Any thoughts of doubt are seen with problematic suspicion, both within and without the individual; maintaining the uninterrupted flow of everyday life is encouraged.

For most people in modern capitalistic economies, paper money as medium of exchange for obtaining goods for daily
survival and ultimate pecuniary commodity is everyday life reality. Moving a step further, *credit/debt based* fiat money and a covert banking ruling class operate as paramount reality. Sovereign states money wealth is created through debt by central and corporate banking. Therefore, whether conscious or not, everyone in the marketplace uses credit for everything they do. Credit's bastard child, interest (or usury to be precise), has for centuries infected and inflated the cost of every manufactured good and service. Simultaneously, interest has and keeps extracting (like an insatiable parasite) society’s wealth and resources. Bitcoin, while a cryptocurrency and somewhat capitalistic, fits in what Berger & Luckmann (1966) call religious “leaping”? That is, bitcoin is analog to a *spiritual awakening*, a born again experience in the realm of value and money relations. Alas, quotidian life preserves paramount reality by way of calendar temporality, spacial location, and language. English, for example, is saturated with connotations of classical political economy (Holborow 1999). Thoughts of what is bitcoin or even worst, questioning if bitcoin is money are seen within the individual as anxiety of consciousness, and without as problematic clashing of everyday reality. Acknowledging the existence of Bitcoin as alternative economic
reality or having the bravery to engage in its small but vibrant intersubjective ecosystem is, for the everyday life as taken-for-granted person, a commendable revolutionary act.

Social Interaction in Everyday Life

Everyday life is not realized in isolation but with others, and the highest event with others occurs in the face-to-face setting, the archetype of social interaction. This is the only channel where subjective idiosyncrasies can be maximized for ultimate interpretation; the “here and now” becomes timeless. This setting fosters subjective closeness between parties, all others foster a divergence of remoteness. Ergo, face-to-face interaction projects the other as entirely real, even more real than oneself. The reality of quotidian life incorporates reciprocal and semi-permanent “typificatory schemes” in how others are perceived and handled in face-to-face interaction. These standard typificatory schemes, while actors engaged in face-to-face interaction, are in a constant back and forth “negotiation”. Typifications wane to anonymity the further apart interaction moves away from a face-to-face setting, in a sort of interaction gravity model. The anonymity of experience is, as
an arithmetic function, conditioned to the level of interest and intimacy in the interaction setting. Thus, the reality of daily life is captured in a “continuum of typifications, which are progressively anonymous as they are removed from the 'here and now' of the face-to-face situation. The social structure is the sum total of these typifications and of the recurrent patterns of interaction established by means of them”\textsuperscript{11}.

Ironically, bitcoin's protocol is decentralized by design because trust is too precious to be left in the hands of bankers, that is, people. In addition, though bitcoin is a peer-to-peer cryptocurrency, most interaction between parties happens technically in hyperreality. Face-to-face interaction is what bitcoin implicitly tries to render obsolete; pseudo-anonymity is part and purpose of the cryptocurrency’s protocol. Typification schemes, by default, become less prominent in P2P interaction between bitcoin users, but highly important to regulatory agencies who abhor transaction anonymity (e.g., IRS and FBI) and money merchants (e.g., banks) who dislike transactions outside the financial system. Bitcoin's identity ambivalence lies in the alienating cybernetic experience of subjective human interaction between parties, while at the same time breaking the current calcified social structures in everyday life reality of what is
money, why money has value, how money is supposed to operate and most importantly, who rules money.

Language and Knowledge in Everyday Life

The passions of people via objectification can be produced and displayed in material form for the world to experience. Every object possesses an intrinsic intentionality, itself subject to the circumstance and context of the parties involved in the situation. To dampen the confusion of subjective intentionality, signification comes to the rescue. Signs, a human invention, are differentiated from objectification by its clear purpose of working as “index of subjective meanings”\textsuperscript{12}. Signs and sign systems permit “detachability” from instant subjective intentionality, available only to “here and now” interaction and varying in degree of intensity. That is to say, subjective intentionality can be understood via proxy (e.g., a hired gunman) or as simulacrum (e.g., a theatrical performance). In human society, language (a system of vocal signs) is the most valuable sign system ever invented. Thus, the objectification of everyday life is preserved mainly by shared linguistic signification. Language temporal and spacial flexibility has an
implicit detachment, communicating meanings divorced from subjective expressions embedded in face-to-face interaction. Language is a metaphorical safety vault of collective human experiences and meanings; language typifies and anonymizes them. At the same time, language works as an external coercive force of factual objectivity. Language is, as Durkheim suggested, a “social fact”\textsuperscript{13}. Through language, the world can be “actualized” at any place in any moment, it has the power to integrate and transcend even the reality of everyday life creating multiple “spheres of reality”\textsuperscript{14}. The “pragmatic motive” or “recipe knowledge”, i.e., mechanical knowledge for ordinary daily tasks, takes a big role in the “social stock of knowledge”. This general knowledge is concentrated in the common topics of quotidian life, and becomes more ambiguous as it moves away from them. This “everybody knows” knowledge is taken-for-granted as valid by everyone in the community, any reason for doubts are suspended as long as the recipe knowledge keeps working and remains relevant to the parties involved. Relevancy of the social stock of knowledge, just as language, has its own structure, covertly imposed on its users. Due to the structuring of social knowledge, distribution is socially conditioned.
Social knowledge asymmetry and ignorance are core elements integral to the complexity of “systems of expertise”\textsuperscript{15}.

Bitcoin is, in terms of symbolic representation, mono-planar\textsuperscript{16}. Because it has no sensorial manifestation, bitcoin can only be experienced as an objective simulacrum of money. For consumers to accept as common knowledge that bitcoin is indeed money, it has to be imposed upon them since bitcoin's is too detached from everyday reality of what is money and how it is supposed to be experienced. How does language affect the way we interpret bitcoin? It is money or currency? Medium of exchange, commodity, or both? What about other languages, where bitcoin as word has no translation meaning, but it does as currency code (BTC), logo (₿), popular (₿) and Unicode (Ƀ) symbols\textsuperscript{17}? Bitcoin has different meanings to different people; the taken-for-granted knowledge of what is bitcoin, compared to what is a US dollar (for example), has not been normalized. The asymmetry on the distribution of social knowledge has dampened the speed and scope of bitcoin users, and thus the aggregate growth of the Bitcoin ecosystem. Capitalism is for every citizen in the developed and developing world everyday reality, manifested in the private property of knowledge, i.e., intellectual property\textsuperscript{18}. Not surprisingly, as long as the general population believe
irrelevant, for everyday life activities, to realize about the positive potentiality of bitcoin\textsuperscript{19} and the oppression and fragility of the current financial system\textsuperscript{20}, structural segregation of knowledge and the interpretation of capitalistic everyday reality will remain intact.

\textbf{Society as Objective Reality}

\textit{Institutionalization}

The animal kingdom, with the exception of human beings, is structurally deterministic in terms of biology and geographic location. Though humans as every other animal have “drives”, they are “unspecialized and undirected”. This occurs because of humans’ peculiar “ontogenetic development”\textsuperscript{21}. Unlike most animals including mammals, humans fully develop only after they are born via their environment, both the natural and cultural. As a result, the social environment regulates humans’ organismic development and because there are no formative biological fixations, we construct our own nature; our identities are socio-culturally auto machined. The self is experienced “eccentrically” as having and being a body, and requires
continuous tuning and balancing\textsuperscript{22}. By definition, human identity is a social endeavor. Heuristically, human life occurs in a frame of order, direction, and stability. All three conditions are detached from nature; they are the sole production of human activity.

Habitualization, an inevitable result of human activity, suggests a sense of future stability by performing the same activity in the same fashion. Thus, habitualization has the inherent psychological comfort of specialization and limited choices for action, condition every human being must confront due to our deficit of biological determinants. Habitualization precedes institutionalization, which occurs “whenever there is a reciprocal typification of habitualized actions by types of actors. The typifications of habitualized actions that constitute institutions are always shared ones”\textsuperscript{23}. Both actors and actions are typified by institutions, and forged by historicity and control. The most relevant feature of institutions is their abstract controlling power of human conduct. This controlling power is independent from other draconian mechanisms (e.g., punishment), perpetuating the apparent control manifesting from the institution itself, that is, perceptive social control. A positive outcome of
institutionalization is the predictability of action among participants; taken-for-granted routines become everyday reality.

For millennia, humans have been habitualized to use money (in its many varieties) as the medium of exchange and universal commodity par excellence. Social communities spring from money\textsuperscript{24}, empires are built and destroyed by money\textsuperscript{25}, people live and die for money\textsuperscript{26}. Though cultural idiosyncratic meanings do fluctuate, capitalism’s taken-for-granted knowledge affirms that money springs from an external source, from a supra-human institution (e.g., the State or the Bank). This general knowledge prescribes that: money does not grow on trees, money is scarce, money is private, money is power, and enough money can justify any human action. In collusion, both the institutions of government and banking control the conduct of economic actors, i.e., collective human action. Today, bank's money via its satanic arm (executioner in old Hebrew\textsuperscript{27}), capitalism, controls most of the socialized world and ignores what cannot be exploited properly\textsuperscript{28}. Money is everyday life; the predictability of billions of institutionalized users eternalizes its exploitative continuous utilization, benefiting the elite and the ruling classes.
When institutions move beyond human temporality, historicity kicks in and transforms into objective reality, its most critical feature. To new generations of humans, institutions are experienced as personal reality, imposed upon them as an "external and coercive fact". Albeit participants in this institutionalized world are responsible for its creation and have the agency to change or destroy it, the transmission process of general knowledge to new generations only reinforces its factuality as objective reality. Via this process, to new generations "all institutions appear... as given, unalterable and self-evident". Because they exist as external reality, institutions cannot be fathomed by introspection but from the outside, just as we experience nature. Still, the key to understanding them rests on the fact that every institution is nothing else but "objectivated human activity". We can sum up institutions cyclical dialectic relationship (i.e., producer and its product) in a simple syllogism: "Society is a human product. Society is an objective reality; man is a social product." [Fig. 57]. Because institutions are transmitted as traditions rather than "biographical memory", mechanisms of social control are imposed to legitimize its authority status.
Deviants are sanctioned, and conduct itself must be institutionalized from early childhood to late adulthood. Predictability of behavior facilitates the process of institutional replication many generations in the future. Language is the first accomplice in the “superimposition of logic on the objectivated social world”\(^{33}\). The institutional “logic” comes integrated in the availability of social knowledge and taken-for-granted reality as it is. Ergo, the “primary knowledge about the institutional order is knowledge on the pre-theoretical level”, i.e., the complete amalgamation of knowledge accessible about the social world\(^{34}\). Because social knowledge works as the validator of truth about reality, deviations from the implicit order of institutions manifest as leaving reality. Figuratively speaking, knowledge is the singularity of the dialectic social cosmos\(^{35}\).
Institutional historicity has been at the center of molding objective reality pertaining to banks. In the US, two central banks were left to expire at great cost. The money merchants, not accepting an alternative reality of America running its monetary policy publicly, used whatever legitimizing mechanism to reinstitute a centrally control banking institution. They finally succeeded in late 1913 when the Federal Reserve System (the Fed) was constitutionally granted monopoly power of issuing legal tender bank notes (US dollar bills). Though Americans were used to fight perverse institutions for over a century (e.g., the British monarchy), this one passed silently through generations via legitimation propaganda. The Fed was perceived as objective reality, as something faraway, static, and undeniable. The past deviants who fought the previous central banks were gone (e.g., President Andrew Jackson), 20th century fighters concentrated their energies against imperialism, or monopoly capitalism, or communism/socialism, or unemployment, or foreigners, instead. Contrary to today’s interconnected world, the social stock of knowledge was limited, easily alterable, and easier to hide. There was no “End the Fed”\textsuperscript{37}, no “Occupy Wall Street”\textsuperscript{38}, no “Venus Project”\textsuperscript{39}, no “Billion People March”\textsuperscript{40}. Fed issued money (US dollar notes) was and still is a social fact,
and the monopoly of issuance, apart from private banks debt based money (discussed in chapter 1), is part of the common stock of knowledge. Any additional model to the institutional modus operandi is acknowledged as leaving reality; BTC fits properly in this category as pathologically deviant. Bitcoin operates at the fringes of social knowledge (as medium of exchange and as digital commodity) and by default, outside of people's everyday reality concerning the legitimate institutional definition of money.

Institutions are incarnated in human experiences by way of roles. By performing roles, which are interchangeable and varied, individuals engage in a social world. When these roles are internalized, their social world becomes “subjectively real” to them. All institutionalized behavior requires roles, and these roles stand for the institutional order. As a theatrical performance, “the actors embody the roles and actualize the drama by representing it on the given stage. Neither drama nor institution exist empirically apart from this recurrent realization”. It can be deduced from this observation that “roles representing institutions is to say that roles make it possible for institutions to exist... as a real presence in the experience of living individuals” [Fig. 58].
These institutions can be represented by natural and artificial symbology, and can only remain alive by the continuous performance of institutionalized human behavior. Socially objectivated knowledge is dichotomized in directly appropriate (i.e., cognitive) and indirectly appropriate knowledge (i.e., values, norms, emotions), as well as its distribution as general and role-specific knowledge. The rate of growth from role-specific knowledge expands at a faster rate due to the division of labor in society, breeding a class of specialists (i.e., knowledge gatekeepers) who properly satisfy the institutional demands of their particular roles. These specialists are typologically identified for everyone; their role becomes common knowledge as the people to consult when special knowledge not
available socially is required. We can summarize society's dialectic in terms of roles that “the institutional order is real only insofar as it is realized in performed roles, and that roles are representative of an institutional order that defines their character and from which they derive their objective sense”\textsuperscript{43}.

Money as \textit{money} and banks as \textit{banks} exist because people choose to believe so, either as proletarians, customers, employees, capitalists, or a mix of them. It is because people’s engaging in \textit{money roles} presumed to exist as factual reality, when a banker tells them to save their money or borrow for a mortgage, or when the broker advise them to invest their money on Wall Street, the archetype of money's institutionalization as universal commodity and epicenter of role-specific armies of “tokos” (barren money) institutional legitimation. Banks and governments have done a superb job maximizing artificial symbology to perpetuate their existence as institutions\textsuperscript{44}. The fact that legitimators from these institutions work for money \textit{themselves} makes the whole process much more efficient and effective. Bitcoin has the limitation of existing only in a cybernetic world, with no official legal institution representing it, no physical form to attach meanings, and no
human collective voice from its mostly anonymous users except a few “fringe legitimators” with hidden agendas. Bitcoin has the dual challenge of deprogramming people's role-playing from the available general knowledge, i.e., that money comes from banks and that banks are self-evident, and banks themselves as an institution interested in maintaining legitimate coercive power over the global population via incessant debt servitude.

The extent of institutionalization in any society is a function of the universality of germane social structures. Two of the most important conditions that foster institutionalization are: the extent of the division of labor and the disposal of economic surplus (i.e., affluence). Both conditions permit “specialization” and “segmentation” in the “common stock of knowledge”. The massive production of journal published theoretical and empirical work by university scholars and research facilities is a sound example. Still, though institutions have a “tendency to persist”, “deinstitutionalization” may be possible in some areas of quotidian life. Paradoxically, segmentation and the resultant asymmetrical distribution of knowledge leads to the complication of supplying “integrative meanings” to the society as a whole and an “overall context of objective sense” to each individual.
fractured “social experience and knowledge”. A second negative externality of institutional segregation is the likely mushrooming of “segregated subuniverses of meaning”. As economic surplus and the division of labor increases, subuniverses of knowledge (some semi-open, some esoteric) appear and grow in tandem, and their representatives may compete against each other for resource allocation. Yet again, dialectics define the “relationship between knowledge and its social base”. Though “knowledge is a social product”, it is also a determinant “factor in social change”.

The fact that bitcoin was invented is testament of how specialization and segmentation in the common stock of knowledge, after a society achieved higher levels in the division of labor and economic affluence, foster the creation of new subuniverses of meaning. Whether Satoshi Nakamoto (as an individual or collective) was located in Europe, the Americas, or Asia, his or her invention reaffirms the premise that the asymmetrical distribution of pecuniary knowledge, dialectically provoked by institutionalization, leads to complications in the transference and thus assimilation of integrative meanings to overall society. The disruption of Nakamoto’s social experience and knowledge relative to the institutionalized discourse, and
subsequently the future followers around the planet, are the reason why Bitcoin, even after suffering several techno-ethical glitches, is at full swing since emerging in 2009. Bitcoin's dialectical power against banking and debt-based money has the reaching potential of deinstitutionalizing from the status quo, while simultaneously evolving into a legitimate institution.

Legitimation becomes a problem for subuniverses as they increase in autonomy, both to insiders as well as outsiders. To keep the outsiders out, various harassing techniques are employed, including distorted propaganda, mystification, and the exploitation of status symbols. On the other hand, insiders are persuaded to keeping in by means of licenses, prestige, and esoteric authority in a particular body of knowledge. The “legitimating machinery” is at full steam when specialists “remain” specialists and laymen as laymen. Berger & Luckmann (1966) then ask, “to what extent is an institutional order, or any part of it, apprehender as a non-human facticity?”51. The answer lies in the reification of social reality, i.e., in the “apprehension of the products of human activity as if they were something else than human products... in non-human or possibly supra-human terms”52, as axiomatic reality spawned from nature. Reification has the implicit connotation of a collective human
amnesia, where the world becomes a creation by some other entity than themselves. The antagonistic dialect of producer and product vanishes in conscious oblivion. Alas, the reified world is a “dehumanized” world, as something outside of human agency. Ipso facto, reification is the radical manifestation of objective reality, where the “objectivated world” detaches its intelligibility as a human endeavor, psychologically sealing itself as “non-human, non-humanizable, inert facticity”. In an illogical fashion, humans are able of manufacturing a reality that negates them; they contradictorily reproduce the same world apprehended in dehumanized reified terms. Concerning institutions, the “basic 'recipe' for their reification... is to bestow on them an ontological status independent of human activity and signification” (Berger & Luckmann 1966), culminating in a merging with the axiomatic world of nature. In a similar sense, roles can be reified just as institutions. Once apprehended, fate is inescapable and thus responsibility jettisoned. Role-paying and individual identity are fused by reification; the individual becomes the social typification of the role when absolute identification is achieved.

As the Bitcoin ecosystem grows in users and scope, legitimation has become a challenge for both Bitcoin and the
institutions interested in Bitcoin's decaying into oblivion. Respected specialists on money advise of the dangers of bitcoin, how millions have been funneled for illegal trade of drugs and weapons, how millions of dollars from hundreds of innocent people have been lost to scammers and criminals\(^5\). Of course, the same legitimating machinery consistently ignores to include in the discourse of general knowledge the drugs\(^5\), weapons and wars\(^5\), financial rackets\(^5\), and other illegal and unethical money endeavors already embedded (but hidden) in the historicity of global banking daily operations\(^5\). Banks and bank issued money have been reified, dereified, and reified again throughout human history. Money is the ideal example of the dehumanized quality of its radical manifestation as objective reality. People engage and perform acts that are inhuman, even antihuman (Chomsky 1973), for the sake of money’s “possessive individualism”. People forget that is not money the one who carries out the atrocious acts, but themselves. Money has been reified to such an extent, that within market capitalism, everything has a price and thus can be bought. Nietzsche (1884) was right when he claimed “God is dead”, but it was the God of the church who died, money took its place as the secular god of modern times (i.e., Mammon). Banks, the Olympian Parthenon of money's
legitimation and institutionalization, are reified as permanent and imperative elements in capitalism. As ideology, capitalism dogma of individuals’ self-realization lies in accumulating money, working for money, and living from money. The symbiotic relationship between banks and capitalism makes them almost impossible for laymen to, on the one hand, acknowledge awareness of alternative realities to what’s imposed, and on the other, because of his/her unawareness, participate in any shape or form on deinstitutionalizing the power structure of society. Role players, all the banking vermin and their lackeys living from general society via rentier wealth extraction\(^58\), once their roles as bankers (i.e., money merchants) is apprehended, they detach themselves from general society as if the role became them; institutional reality is reified. It is no surprise to see how this role-playing takes over logic; the evidence is seen everywhere money worshiping trumps human life\(^59\), animal life\(^60\), and the environment\(^61\). Bitcoin has limited role players; consumers and miners have a shared interest for the ecosystem to survive. Reification would not be so difficult since the protocol (exogenous, static, atemporal) has absolute control over trust, and transactions occur already in an immaterial, technological, beyond-human realm. Traders and investors are
indifferent if Bitcoin survives or not, as long as they make money (i.e., a profit) on their investment. They are covert specialists from financial and government institutions doing reconnaissance work. If Bitcoin becomes a problem to the status quo, their assessment will decide what strategy to use and how it is implemented. Infinite money corrupts everything, even some of the (formerly) staunchest Bitcoin legitimators become pray. Bitcoin's decentralized and predetermined total number of units to mine (21 million approximately) may be a deterrent from becoming misanthropically reified, leaving aside the historically ingrained vices of legitimized bank money and the roles demanded from its loyal worshipers.

Legitimation

The purpose of legitimation is to provide institutionalized “first order” objectivations objective availability and subjective plausibility. The usual purpose incentivizing institutional legitimators is the process of “integration”. Institutional integration pertaining subjective plausibility corresponds to two parts [Fig. 59].
First, every participant in different institutional processes should make sense of the totality of institutional order (horizontal integration). Second, the individual person's biography, across time in institutionally delineated stages, must be qualified with enough significance to validate the whole as “subjectively possible” (vertical integration). Legitimation emerges to the rescue when the objectifications of the archaic institutional order are to be passed to new members of society; the fusion of institutional history and biography is fractured. The process of legitimation “'explains' the institutional order”, assigning “cognitive validity” to its objectivated connotations; it “justifies the institutional order” by providing a “normative dignity to its practical imperatives”.

Figure 59: Institutional Integration
How can Bitcoin become integrated in the general discourse when competing with one of the strongest institutions of the world (i.e., banking)? For a minority of money users, bitcoin and cryptocurrencies in general are a vague technological invention. For the majority, bitcoin exists completely outside of their cognition, far away from taken-for-granted reality and the common stock of knowledge\(^6\). It is too early to say, considering bitcoin is only seven years old\(^5\), if legitimation will even occur. When monetary transactions with bitcoins (or other cryptocurrencies) become a tradition and not simply an aberration or “game for geeks” (i.e., as an alternative subuniverse with enough autonomy from institutional reality), legitimation may take place to justify its use as integral process of the institutional order, or taken-for-granted reality. Meanwhile, Bitcoin’s operating at the fringes of social reality while expanding continuously to reach critical mass, has been a fructifying strategy to keep away from status quo backed neutralization.

Legitimation is not simply an issue of “values”; without fail, “knowledge” is implied likewise. Legitimation not only tells individuals why they should act in one way rather than another, but just as important, tells them why the world is the
way it is. In the legitimation of institutions, “knowledge” heralds “values”. Once a symbolic universe is created by means of symbolic objectifications, a complete world is created; the entirety of human experience is realized as happening within it. This universe is visualized as the “matrix of all socially objectivated and subjectively real meanings” (Berger & Luckmann 1966). The roles within institutions become means of involvement in a cosmos that “transcends and includes the institutional order”. The curbing of an ultimate legitimation is symbiotically correlated to the level of “theoretical ambition and ingenuity” sponsored by the legitimation clique (i.e., the elite), the institutionally certified “definers of reality”. These symbolic universes are historical social products, which meanings are to be understood in the history of its production. The one essential characteristic of the symbolic universe is the “nomic” or order of everyday life function. It provides the maximum legitimation of the institutional order by granting precedence in the “hierarchy of human experience”. The symbolic universe orders and consequently legitimates every human action (e.g., roles, priorities, procedures) by locating them in the most catholic frame of reference possible. “Correct” behavior (following nomic order) has high hierarchical preference; anomic
behavior (deviance from the symbolic universe) results in segregation and solitude. The institutional order becomes “the big Other”, the protector from anomic terror. Chaos is the nemesis of legitimized institutional order. Social reality is fragile, always clinging on a thread from inadvertent collapse. The formal role of institutional legitimators is to kept social chaos subdued at all cost, working as “machineries of universe maintenance”\textsuperscript{68}. Because socialization is never complete, individuals experience in different degrees of idiosyncratic particularities the symbolic universe. Problems arise when groups of people take part in deviant versions of the everyday symbolic universe, when their fringe objectivated reality becomes the vehicle for a substitutable definition of reality. Threats to the “official” reality by heterodox alternatives are suffocated by the machinery of universe maintenance, who justifies its legitimacy by relegating every other model of reality as an axiomatic impossibility [Fig. 60]. Ergo, the group with more power instead of sophistic theoretical aptitude decides which symbolic universe will prevail for the whole of society\textsuperscript{69}. Social change and the “history of ideas” are dialectically correlated. All symbolic universes and legitimations are the machinations of collective human
imagination, machinations that exist empirically hollow outside of human minds.

Figure 60: Institutionalization Process

People know that money (i.e., bank money) has value. That has been the banking institution legitimator’s campaign motto for several centuries. We now live in a globalized world, a financial world, an electronic money world. Our lives, the complete human experience, are apprehended within the sphere of money, banks, private property, and capitalism. The symbolic universal reality of banks as rulers of the world, coercively imposed on the population by institutional legitimators,
presents itself as nomic. This axiomatic, hierarchical, and orderly universe of everyday life reinforces tautologically the legitimation of the same institution it represents. Banks rule, thus bankers (the role players and legitimators of the reified institution) are entitled to rule, be rich, have legal impunity, and be emulated. This apparent cosmic order of society has proper ways for actors to perform, that is, they must follow the role scripted by the ruling institutions. Deviance from the norm is not only discouraged, but subject to anomy and punishment if pertinent. Bitcoin fits in the latter category; it is the nemesis, the problem child of the institutional dialectic of social reality, a potential harbinger of chaos in the fragile institutional order. It is not necessarily bitcoin the actual menace, but what Bitcoin represents as P2P decentralized cryptocurrency, miner issued and owned, “code” regulated, pseudo-anonymous, open-source blockchain technology, and operating globally outside from institutional control. Gatekeepers and anti-legitimators (i.e., institutional legitimators disapproving or against Bitcoin), like the CATO Institute, JP Morgan Chase CEO J. Dimon, former chairman of the Federal Reserve B. Bernanke, and pop-economist P. Krugman are hard at work as universe maintenance automatons.
The standardized media discourse conveys bitcoin as a techno-marvel, but a fiasco as potential substitute for bank issued money. Even worse, bitcoin is labeled as the ideal tool for criminals, anarchists, and money libertarians (anti central banks), as if the true deviants did not exist in the institutionalized taken-for-granted bank money reality, the official money of social evil courtesy of perverse democratic capitalism\(^\text{81}\). Bitcoin, for the legitimizers of ruling institutions, is a practical impossibility from the status quo, and sold to the world as such. That is why advocates for Bitcoin around the world from all different backgrounds and expertise (e.g., M. Keiser\(^\text{82}\), A. Antonopoulos\(^\text{83}\), R. Ver\(^\text{84}\)) remain part of a segregated fringe. The legitimizing power of the ruling class (via persuasion with money or by force with terror) still has more influence over illegitimate, though technically and theoretically sound alternative universes. Yet, all institutions are socially constructed, hence alterable and finite. It is up to humans themselves (not “the big Other”, ‘god’, or other collective delusion\(^\text{85}\) as reified society), to liberate from the chains of their own inhuman and antihuman institutions; “there is no big Other” (Flemming 2014:541). Banking and its remora like dependencies are at the top of the list. Legitimatizing
Bitcoin can effectively assist in the deinstitutionalization process of the current oppressive power structures.

Now that we have covered the fundamentals of money and Bitcoin in Section 1, and examined bitcoin under the three theoretical layers (Social Exchange, Marxian Dialectics, and Social Construction of Reality) in Section 2, we can move forward to Section 3, the thesis’s methods and results.

Notes

7 Ibid, 1966:27.
16 Can only be experienced as a symbolic manifestation of something else from lack of physical representation available to the generally accepted five senses. Term operationalized by Villarreal, 2016.
17 For BTC currency symbol, visit: bitcoinsymbol.org. For bitcoin logo, visit: en.bitcoin.it/wiki/Promotional_graphics
18 Perelman, 2002. Steal this idea.
19 Watchulonis, 2015. Bitcoin: The End of Money as We Know It [film].
33 Ibid, 1966:64.
36 For a brief historical account of the First and Second Bank of the United States chartering, visit: www.history.com/topics/bank-of-the-united-states
39 The Venus Project: www.thevenusproject.com
40 Billion People March: www.billionpeoplemarch.org

Symbolic universes are “bodies of theoretical tradition than integrate different provinces of meaning and encompass the institutional order in a symbolic totality. Symbolic processes are processes of signification that refer to realities other than those of everyday experience.” Berger & Luckmann, 1966:95. The Social Construction of Reality.


For more on Max Keiser and bitcoin, visit: The Keiser Report (www.maxkeiser.com)

For more on Andreas Antonopoulos and bitcoin, visit: https://antonopoulos.com/


SECTION FOUR – METHODS & RESULTS

CHAPTER 6 LAYER I
GLOBAL EXCHANGE OF BITCOIN

In this section, we will cover the methods employed to examine the quantitative research questions proposed for chapters 3, 4, and 5, or theoretical layers I to III (see Table of Contents, Section Three). The secondary data used for the analysis comes from several online resources specialized in Bitcoin, each resource will be specified on each corresponding chapter and figure, including the data calculation modeling when available. It is important to consider that by the time this thesis reaches the printing press, most BTC facts and statistics presented in the following 3 chapters will be quite different.

As of late April (2016), 15,468,475 BTC have been mined (i.e., issued) since its inception in 2009\(^1\) [Fig. 61]. Not all mined bitcoins are in circulation, some are saved for future use (i.e., storage of value) or as hedge against currency volatility; others have been lost to technical glitches or user carelessness.
This global aggregate equates to a market capitalization of $6.96 billion US dollars\(^2\) [Fig. 62], roughly the GDP size of the Republic of Guinea\(^3\). BTCs parity exchange value relative to US dollars has increased 1000\% in the past 3 years, currently trading at $457.10 US dollars per one BTC\(^4\).
Bitcoin global transactions reached 176,833 in the last 24 hours [Fig. 63, see below], or approximately 7,368 per hour. The total number of BTCs submitted to the blockchain in the last 24 hours reached 2,206,495.12, or about 91,937.30 BTCs per hour. Since mid-2012, bitcoin transactions per day have been constantly growing in a steady positive slope. Though transaction volume volatility can be quite dramatic (e.g., 50% decline or jump within one week), trust in the cryptocurrency's ecosystem and bitcoin's code has successfully overcome these wild swings. Much of the volatility can be attributed to fraud.
and malicious hacks on exchange servers (traders and consumers panicking to collect their BTCs)\(^8\), rather than extinction of confidence or some form overtly perverse institutional intervention in the cryptocurrency’s ecosystem operation. There seems no systematic or asymmetric reason for bitcoin stopping its effervescent expansion to legitimation as everyday reality money.

**Figure 63: Total Bitcoin Transactions per Day (2009-2016)**
Notes

1 Retrieved April 24, 2016 (blockchain.info/charts/total-bitcoins)
2 Retrieved April 24, 2016 (blockchain.info/charts/market-cap)
4 Retrieved April 24, 2016 (blockchain.info/charts/market-price)
5 Retrieved April 24, 2016 (bitcoincharts.com/bitcoin)
6 Ibid.
7 Retrieved April 24, 2016 (blockchain.info/charts/n-transactions?timespan=1year&showDataPoints=false&daysAverageString=1&show_header=true&scale=0&address=)
Though data and analyses are limited for the consumption of bitcoin in the global arena, we will use Lui Smyth (2013) survey dataset about the (English-speaking) bitcoin community and Borh & Bashir (2014) exploratory paper “Who Uses Bitcoin?”. From both studies, albeit not randomly sampled due to bitcoin’s embedded pseudo-anonymity, we can arrive to several intriguing conclusions pertaining its overall utilization, that is the who, where, and why of bitcoin's consumption.

Smyth's (2013) survey of 1000 individual responses unearthed the following interesting descriptive statistics about the “average” bitcoin user:

- 32.7 years old is the average user's age
- Top 3 new user’s motivators are: curiosity, profit, and politics
- 36.7% of bitcoin users do not drink, smoke, gamble, or take drugs
- 95.2% of users are male; 55.6% are in a relationship
- 44.3% are libertarian/anarcho-capitalist; 61.8% are non-religious
• 31.2% find regulation/legal intervention as greatest fear
• 60.6% use BTC for donations/gifts and computer services
• 44.7% have a full time job

From these numbers, we can reckon that the English-speaking bitcoin consumer community is male dominated (hegemony?\(^2\)) by older millennials\(^3\). Over one-third keeps an ascetic lifestyle, almost two-thirds use bitcoin exclusively for legal routine purchases, and about half have a steady income. More than half are religious nones\(^4\), almost half reflect anti-institution sentiments (e.g., government and central banks) and one third worries from government intrusion to the Bitcoin ecosystem. While the media may portray the bitcoin user community as an eclectic collection of rebels, pirates, and gangsters of money cybernetics, they are far away from revolutionaries in the world of Eugene Debs\(^5\) or J. Diamond’s “Guns, Germs, and Steel” (1999). Could it be that America’s intellectuals (e.g., Noam Chomsky\(^6\)), have pasteurized the connotation of anarchism to such an extent that one variant, anarcho-capitalism\(^7\), is quite fashionable among 21\(^{st}\) century bitcoin consumers? Could a system-chattering cryptocurrency revolution occur under a trendy albeit untested socio-economic philosophy?
According to Borh & Bashir (2014) log-linear regression analysis, young and old users are less optimistic about bitcoin's future compared to consumers in their thirties. Ideologically, bitcoin is attractive to libertarians as an economic-freedom alternative from government power structures and regulation. Left-of-center BTC consumers are more inclined to use bitcoin for its financially decentralized payment capabilities. Borh & Bashir (2014) results are limited to English-speaking respondents, and although these respondents may be situated all over the world (Oceania, S. Asia, N. America, South Africa and the British Isles), about 53% of all BTC consumers are located in either North or South America.

Compared to other avant-garde alternative monetary models, Bitcoin is neither as radical nor as political. Michael Tellinger’s (2014) effervescent Ubuntu Liberation Movement and Ubuntu Party (South Africa), proposes not only an evolulutional social-reorganization of the capitalistic model of production, distribution, and consumption of goods, but the total eradication of money and banks. The movement’s philosophy, contributionism, could symbiotically benefit from Bitcoin’s ontological qualities of decentralization and as universal medium of exchange, even if only during the transition process.
to a moneyless economy of egalitarian abundance. In the United States, eccentric Jack Fresco (1995), leader of the Venus Project\textsuperscript{10}, offers another social organization model alternative. He envisions a techno-utopia where machines regulate the means of production (under human orders), abundance is ubiquitous and accessible to every member of the community. Money, by default, is redundant in both use and exchange value. On the one hand, compared to Ubuntu, there is not a clear path to fit bitcoin in the Venus model. Its philosophical tenets are neither pragmatic nor grounded on strong grassroots activism. Bitcoin’s blockchain technology, on the other hand, has definitively gainful application potential once the project breaks ground.

Notes

\textsuperscript{1} For Bitcoin’s community age distribution table, visit: simulacrum.cc/wp-content/uploads/2013/03/bitcoin-age-distro-300x213.png. Retrieved April 24, 2016.
For an extensive bibliographical list of Chomsky’s critical works, visit: dwardmac.pitzer.edu/anarchist_archives/chomsky/chomskybiblio.html

McKay, (n.d.). An Anarchist FAQ. Is “anarcho”-capitalism a type of anarchism?. Retrieved June 16, 2016 (infoshop.org/AnarchistFAQSectionF)


Ubuntu Liberation Movement: www.ubuntuplanet.org

The Venus Project: www.thevenusproject.com
CHAPTER 8 LAYER III
GLOBAL INSTITUTIONALIZATION OF BITCOIN

At this point in history, due to its disruptive blockchain technology and as aberrant alternative subuniverse of taken-for-granted reality, bitcoin is several years (if not decades) away from becoming institutionalized. Legitimators of the status quo machinery (i.e., the state, banks, and its army of minions) are hard at work putting a damper on bitcoin's global expansion as a legitimate means of payment (i.e., money), medium of exchange (i.e., payment method), and source of wealth (i.e., commodity).

On a positive note, there is light at the end of the tunnel, and it’s not a train heading our way at full steam. The collective effort of the Bitcoin ecosystem, whether for altruistic reasons or simply following the capitalistic profit model, is gradually paving the way and expanding the horizon of bitcoin as currency and method of payment in an international scale [Fig. 64]. On the e-commerce arena, consumers can now buy BTC gift cards, pay at market places, and bet at gambling sites¹. Brick and mortar businesses are now accepting BTCs to pay for food, beverages, hotel accommodation, motor vehicles, and even real estate property². But the widest sector penetrating fiat

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based economies is service⁴. There are mining pools, transaction software, charity donation (e.g., art, entertainment, activism, open source, religion)⁴, and air travel⁵ enterprises accepting bitcoin as means of payment. Some of them, alas, technically use a proxy (e.g., Coinbase or Bitpay) to clear the transaction and immediately exchange the BTCs to whatever fiat their location jurisdiction accepts⁶. Ironically, this apparent benevolent commercial practice works against Bitcoin's ideology of decentralization and circumvention of third-party reliance. In other words, the conqueror became a servant of its conquest.

Figure 64: Commercial Institutionalization of Bitcoin
Diagrammatic interpretation by Villarreal, 2016.
For example, one American company is working to integrate cryptocurrency payment technology into a few US municipalities. The goal is to accept bitcoin as payment for taxes and other local services directly through their websites. In Europe, the University of Nicosia in Cyprus recently introduced an MSc degree in Digital Currency, and is accepting BTC for tuition payment. Bitcoin consumers can utilize several online platforms to locate across the world via GIS mapping where to buy and spend bitcoins. Even bitcoin ATMs are beginning to gain momentum in several cities across North America, Western Europe, Australia, and Asia Pacific.

International governments and regulatory agencies, on the other hand, are dealing with a conundrum. They are prohibiting the use of bitcoin as means of payment (e.g., Kyrgyzstan, Ecuador, Bangladesh, Thailand), regulating its use (e.g., Brazil, Bulgaria, Iceland), taxing its use (e.g., Germany, Norway, Sweden, US), warning against it (e.g., Russia, Lebanon, Jordan, Lithuania), supporting its development (e.g., Luxembourg, Hong Kong), or leaving it unregulated (e.g., Singapore, Vietnam, Netherlands, UK). Most sovereign states do not know how to deal with bitcoin, much less understand and harness its potential. To fill in the blanks, banks and the
international financial services industry are steering governments to regulate bitcoin. This for the simple reason of actual and potential profit losses in global transaction fees and the fact that banks cannot issue fractional reserve debt from bitcoin, in juxtaposition to ex nihilo (legal tender) fiat money. Money laundering is another ad hominem fallacious excuse to regulate bitcoin, especially since international banks are the first offenders breaking the law, profiting for decades from trading billions of dollars in mafia money, rigging exchanges, and pillaging pension funds with blatant impunity\textsuperscript{12}.

As we have noticed, Bitcoin may or may not be an adequate alternative universe to finally become institutionalized and in due course reified in the human psyche, either as money or something else. Both processes could take from a few decades to several centuries (the internet and Christianity are two sound examples). The rule of natural selection, as it has infallibly done for millions of years, may play the same fate on this pioneering cryptocurrency.
Notes

2. Ibid.
3. Ibid.
SECTION FIVE - CONCLUSION

CHAPTER 9: GENERAL REMARKS

The years of easy money (Kaul 2014) and quick economic patching are coming to an end. In the developed world, when ZIRP (Zero Interest-Rate Policy) lost its monetary magic, NIRP (Negative Interest-Rate Policy) came to the rescue. But to rescue who? NIRP is the embodiment of legalized extraction of wealth, not for society but against it. There are 25 countries (5 different currencies) using this draconian policy (Kotok 2016), two years ago it was not even under the radar. What we are witnessing is not the typical boom-and-bust economic cycle, but a systemic crisis of capitalism (Xie 2016). Why should we care about ZIRP or NIRP? What do they have to do with bitcoin? Access to goods and services in a market economy is a function of each actor’s purchase power, itself dependent to two conditions: the amount of money (i.e., universal commodity) in control by the actor, and the exchange-value of the actual money (e.g., how much you can trade for a dollar now and a year from today). Zero and negative interest-rate policies diametrically
affect the actor’s purchase power. Consequently, limiting and reducing access to necessary goods and services. Without diving deeper into the mechanics of interest rates and purchasing power, neoliberal capitalism, in collusion with central banking, is keeping itself alive by subtracting wealth from society via asset confiscation, albeit disguised as “negative interest rates”, a ludicrous misnomer.

As mentioned in previous chapters, bitcoin’s ambivalent personality appears as a savior of capitalism and its nemesis. One the one hand, bitcoin can save capitalism as hedge against worthless paper money, paradoxically via detaching itself from conventional models of monetary operation. Though still quite volatile, consumers around the world acknowledge bitcoin as an alternative universe of wealth preservation, or as “digital metallism” (Maurer et al. 2013:263). This wealth preservation quality, combined with the politics of community and trust (embodied in the “code”), endow bitcoin with objective exchange-value. On the other hand, though not necessarily today, BTC can evolve into what Antonopoulos (2016) metaphorically calls “the internet of money”. The analogy between Bitcoin and the Internet is evident to the one elemental feature that defines them as revolutionary: decentralization. No one owns it, no one controls
it. The Internet is open to everyone, it leveled the field to communize (Zizek 2015) knowledge, education, and intellectual property. It shattered the barriers of time, distance, and cultural isolation. Bitcoin has similar (and dangerous) qualities: uniting countries instead of dividing, democratizing money, making it transparent, ubiquitous, free of spatiotemporal constraints, of coercive laws, of parasitic monetary cartels. The future of bitcoin may be the destiny of capitalism, hence this antagonistic dynamic yielding a new synthesis, Bitcoinism. Moving beyond the dystopian versus utopian rhetorical clash of modern neoliberal economics, no one knows what fate the cosmos has in store for us. Still, a world without authoritarian, bellicose, and hierarchical institutions (e.g., central and private banks, and their bureaucratic offspring) appears as a better option to the human, social, and ecological catastrophe their profit driven money-making ideology has engendered.

Closing our colloquy, is Bitcoin a new wave of digital secular humanism? Reified as Campbell’s mythical “hero” (1999)? Saving us from our inescapable mortal condition? Ergo, are we transcending time and space in Bitcoin? Or is it a catharsis, an algorithmic scapegoat (Girard 1986) to wash away our collective sins? Only time will tell, in the meantime, long live Bitcoin!
EDUCATION

https://bitcoin.org/bitcoin.pdf
https://en.bitcoin.it/wiki/Main_Page
https://bitcoin.org/en/
http://www.vnbitcoin.org/
https://bitcoinfoundation.org/
https://www.bitcoin.com/
https://www.weusecoins.com/
http://www.visualcapitalist.com/?s=bitcoin
https://www.youtube.com/channel/UC4aLFppCMtvTS1L74OhM89A

WALLETS & EXCHANGES

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https://choosecase.com/
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http://www.bitcoinarmory.com/
https://netki.com/#/home
https://www.bitstamp.net/
https://localbitcoins.com/
https://www.bitfinex.com/
https://btc-e.com/
https://www.kraken.com/
https://cex.io/
https://bitsquare.io/
https://magnr.com/learn-more-trading?r=zeroblock_magnrtrading
https://www.volabit.com/en
https://bitso.com/
https://mexbt.com/en/
http://www.coinffeine.com/

STATS & NEWS
http://www.coindesk.com/
https://bitcoinaverage.com/#USD
https://bitcoinwisdom.com/
https://www.tradingview.com/
http://bitcoincharts.com/markets/
http://cryptocoincharts.info/main/priceBoxes
http://coinmarketcap.com/
https://www.cryptocoinsnews.com/
https://bfxdata.com/
http://bitcoinist.net/
http://themerkle.com/?s=bitcoin
https://fee.org/search/?q=bitcoin

MINING
https://www.genesis-mining.com/
https://hashflare.io/
https://tradeblock.com/bitcoin/mining/
https://bitcoinwisdom.com/bitcoin/calculator

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https://blockchain.info/
https://tradeblock.com/
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FORUMS & ADVOCATES
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SPENDING BTC

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https://ripple.com/
https://www.ethereum.org/
https://tether.to/
http://www.bitcoincapital.io/
http://www.bitangels.co/

REFERENCES


162


Butler, S. D. (1935). War is a Racket. Round Table.


Flemming, G. (2014). In the beginning... was the act! Money, analysis, party. *Rethinking Marxism,* 26(4), 526-544.


Law, J. (1705). Money and Trade considered, with a proposal for supplying the nation with money. Edinburgh, UK.


