

BITCOIN: RUBE GOLDBERG MACHINE, ANTIQUE THROWBACK, GIGANTIC DISTRACTION, ENTERTAINMENT, RIPOFF OR NEW MONEY?

Niccolo Caldararo*

San Francisco State University, Department of Anthropology
San Francisco, The United States of America

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ABSTRACT

A means of exchange and preservation of value is likely as old as our species. Global economic trade is often argued to be as old as trade. The question of the nature of the exchange, of who creates the value and how it is regulated is the issue. While tin from England may have reached Sumeria 4 000 years ago, or Phoenicians' ships entered the Africa area of Cape Palmas at about the same time, the problem of exchange is a central issue. Ideas of money are as diverse as the cultures that produce them, yet today global trade is experiencing modifications of the satisfaction of exchange with new platforms of electronic money. Blockchain technology is touted as foolproof, such claims have appeared in the past with various financial innovations. Such abstractions of value may not be new, but as a product of technology and complexity they create psychological novelty and a form of mesmerizing fetishism (Douglas, M. and Isherwood, B., ed.: *The World of Goods: Towards an Anthropology of Consumption*. Routledge, London, 1978). Manias of value are also not new, from stock (South Seas Corporation) to tulips (MacKay, C.: *Extraordinary Popular Delusions and the Madness of Crowds*. Crown Press, London, 1841). The form of the mania is defined and expressed culturally but is often associated with technological change and distance of exchange of partners and clients (Baric, L.: *Some aspects of credit, saving and investment in a 'non-monetary' economy (Rossel Island)*. In: Firth, R. and Yamey, B.S., eds.: *Capital, Saving and Credit in Peasant Societies*. Aldine Publishing, Chicago, pp.35-52, 1964.). Inequality is also a feature, embedded in economic and technological disruption of trade and exchange. The role of redistribution and taxation are essential in maintaining social credit and equality. We can relate such behaviour to other systems of animal societies.

KEY WORDS

Bitcoin, Blockchain technology, electronic currencies, script, money, government, trade, taxation

CLASSIFICATION

JEL: G1, G4, N1, N2, N7, N9, O3

*Corresponding author, *η*: cald@sfsu.edu; +1 415 405 2536;
Anthropology Department – College of Liberal & Creative Arts, San Francisco State University
1600 Holloway Ave SCI 377, San Francisco CA 94132, U.S.A.

INTRODUCTION

The hysteria over Bitcoin and other cybercurrencies and the rapid rise and fall of their value as well as the collapse of Mr. Gox, losses at NiceHash and CoinCheck, should remind people of other such attractions of the 20th century. In the 1956 movie *Forbidden Planet*, Figure 1, voyagers from Earth discover a planet on which the ancient inhabitants (the Krell) had built a highly advanced civilization. One feature of this civilization was that the creators had disappeared in physical form, yet their machines continued to be powered by renewable sources and functioned in fine form. The human space adventurers on investigation of this society noted that they had also produced a sort of internet and advanced computer systems (certainly for 1956) that allowed them to expand their knowledge and intelligence while *hooked up* to the machines.

Unfortunately the learning power unleashed *monsters from the id* which caused the Krell to destroy themselves. Like the Krell, perhaps our internet, Facebook and Twitter are sending us in the same direction. One feature of computing today, Bitcom production, seems like another invention of the 20th century, the Rube Goldberg Machine, and appears like a fascinating distraction which has elements of addiction and mass psychosis. The Rube Goldberg Machine originated as a cartoonist's concept to satire the complex machines of the early 20th century and the attraction for novelty and complexity. Like the attractive, but confusing complexity of derivative contracts of the 1990s and early 2000s, the Rube Goldberg Machine was designed to defy understanding and yet its very complexity hid the fact that it did nothing, e.g. as in Figure 2. Its central lie was that it was supposed to be a perpetual motion device and go on working without any additional input.



Figure 1. Forbidden Planet. Source: <https://colmhogan.files.wordpress.com/2010/05/forbidden-planet.jpg>.

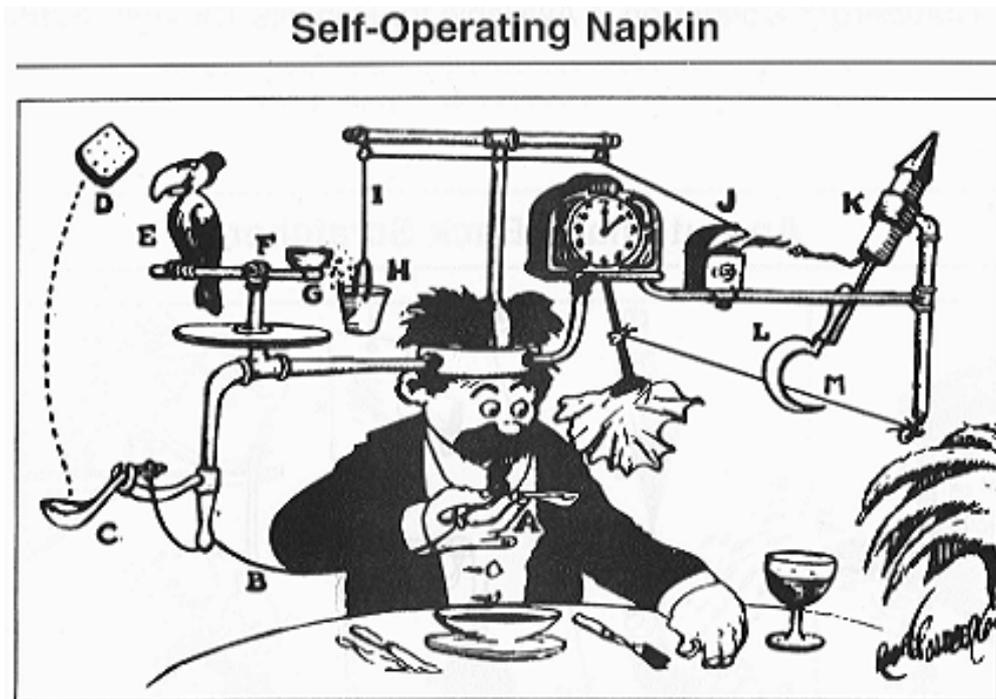


Figure 2. Rube Goldberg Machine. Source: https://en.wikipedia.org/wiki/Rube_Goldberg.

LINKING MINDS

The rather deadly attraction of novelty can be seen in the ever exploding number of new devices, experiences and virtual money, but also in a raw fashion in the response of the Native People of New Guinea to the arrival of European miners in the 1930s. The grip of the new has transformed us all as it did to the people in New Guinea at that time captured in the movie, *First Contact* (not the Jodie Foster film of alien contact, but ethnographic documentation). The 20th century saw an increase means to distract a population, especially from the forms of media: movies, radio, TV and then the internet, followed after 1980 by a vast variety of electronic devices to the point where today most people wander about with eyes glued to a smart phone or listening to internet provided content. This element of distraction as social control in history and its basis in human evolution is discussed in a new book [1]. Is the attention of the human mind best used in creating *cyber cats* as referred to in a recent article on one of the cryptocurrencies, or is this direction a form of self-destruction of the potential of the human brain and its evolution to the present? *Cyber cats* (created in the game of *cryptokitties*) certainly seem better than cyber war.

The evolution of the brain in social insects has been drawn from the model of parasitic wasps [2, 3]. In the first stage the female kills a prey and lays her eggs on it. They hatch and feed on its body. A major leap in parental care occurs when the female stays with the young and protects them which creates a *nest* and leads to generational continuity and opportunity for bond development [4]. The next stage is the retention of the nest and the siblings over time and their association facilitated by means of communication and more elaborate nest structures, both for protection and increased density. This is a model sketched also by J.P. Scott [5].

In general the brains of highly social insects are larger and more complex than solitary species and here two theories of social evolution and brain specialization and evolution come into conflict. The *task specialization hypothesis* (TSH) argues that brain size increases as tasks multiply and become more complex in larger social groups. In the *social brain hypothesis* the rigors of living in large groups imposes greater requirements for cognitive

disturbing are proposals from central bankers that the entire banking system should be put on a single blockchain system, with the use of Central bank digital currency to replace other forms of fiat money in digital wallets and transactions as was recently suggested by B. Coeure, Chair of the Bank of International Settlements Committee on Payments and market Infrastructure, and J. Loh, Bank of International Settlements Chair of the Markets Committee [18].

Cryptocurrency has the advantage that it is nowhere, it is a perpetual internet ghost of value, recorded in virtual ledgers across the globe and unavailable for taxation or, theoretically theft, though that idea has already failed. Like many new fashions in finance, Block Chain Technology claimed it was impossible to be corrupted. The nodes of the real time ledgers could not be undermined by anyone accessing the chain or any of the participants [19], yet this has already taken place. Dowd and Hutchinson [20] argued that the Bitcoin cryptographic problem could be solved by specially optimized computers (Application Specific Integrated Circuits, or ASICs) and by working in pools, but perhaps the desire to increase assess has decreased security. And the number of cryptocurrencies continues to rise to more than 1500 by February of 2018. Harwick [21] addressed many of these problems and focuses on a central issue that is at the core of credit and business: trust, in cryptocurrencies anonymity undermines transparency and promotes cheating [22].

COST OF CRYPTOCURRENCIES

The cost to produce a Bitcoin has changed dramatically since 2009 when a laptop was sufficient. An article by Nicole Kobie, published in WIRED in December 2nd, 2017, outlined the situation in 2017. For 2017, specialist software like Antminer S9 and a dedicated *mining rig* that can cost over 1000 GBP is needed and already made obsolete by new huge *mining factories* that are the investments of hedge funds and billionaires.

But finding the true cost of even automated, robot Bitcoin *mines* is difficult, Kobie argues: “According to its Bitcoin Energy Consumption Index, the network of computers that verify bitcoin transactions draw 3.4 Gigawatts (GW) – a single watt is a joule per second, and your laptop probably probably uses about 60 W. That 3.4 GW adds up to 30.1 terrawatt hours (TWh) per year of energy – that doesn’t mean that much energy is used per hour, every hour, but is instead a measurement that equates to the amount of work those 30 terrawatts would do over an hour. In this case, that 30.1TWh is equivalent to the energy used by the entire nation of Morocco annually.”

She cites other sources who place the cost between 470 MW and 3 GW while the revenue from mining was set at about 8 billion US\$. We now also find that *cryptojackers* are stealing energy and computer time to mine digital coins [23]. Still the software to mine can be downloaded free, the energy use for computers, both the winners and losers requires also a lot of storage space. Since a total of 21 million Bitcoins can be mined about 4,2 million remain and the race to collect these is intensifying. In fact, the concentration of companies in Iceland where renewable energy is plentiful, has produced the likelihood that 2018 will see more energy used on the island to mine Bitcoins than to power its homes [24]. So essentially cryptocurrencies like Bitcoin are a game, a complex game played with equations.

As the report on the Coincheck *robbery* describes, the company’s block chain did nothing to stop the heist, nor did it allow for tracing the *hacker-entrepreneur*. It did provide a blow by blow account of the miscreant’s theft as he or she entered the system to loot a *hot wallet* (one connected to the internet) and then proceed to empty the entire stock of coins [25].

MONEY, CREDIT AND TECHNOLOGY

The debate and excitement over new electronic forms of money like Bitcoin [26, 27], and efforts to deal with international trade and various means of manipulating national currencies,

is generally carried on without any reference to history. In the use of money as an investment or speculation, like the carrying trade in Yen, we find some economists, for example K. Rogoff [28], argue that we should abandon all forms of fiat currency (government or bank-produced forced money) and move to an entirely electronic monetary system. The growth of foreign exchange transactions has been phenomenal, rising from about 500 billion US\$ a year in 1989 to almost 900 billion US\$ a day in 2012 according to the Bank of International Settlements.

In 1977 in the midst of a recession, J. Martinez de Hoz, Jr., then Argentina's minister of the economy, blamed too much credit and too little trade for the downturn, while most other economists pointed to the flood of oil dollars into world financial systems [29]. Sassen [30] has demonstrated that while there has been a dispersal of economic activity since the 1970s, this has resulted in a greater concentration of ownership and control and that, given the inter and intra-exchange relations of globally situated companies, much of this trade is managed resulting in less free trade. Rostovtzeff [31] saw a similar pattern in the Roman Empire after the defeat of Carthage with large capitalist investment in newly acquired territories, rising inequality due to managed trade and concentration of wealth within Italy as well. Its economy was largely a free trade system and *laissez-fair* capitalism, given that contracts from the government not only were used with private companies to build bridges, public buildings and roads, but also to provide many government services.

CURRENCIES AND EXCHANGE MEANS

Benn Steil [32] (then Director of International Economics at the Council on Foreign Relations) argued that with the end of Bretton-Woods on August 15th 1971, the world trade finance was hampered by some 200 currencies circulating in the form of irredeemable IOUs. He pointed out the damaging effects both domestically and internationally where governments were manipulating currencies for particular sector interests. Theories of the effect of money on development often use examples from the 19th century where gold from California and Australian gold strikes flooded the world and produced short periods of investment and consumption (as C. Rist describes in his *History of Monetary and Credit Theory*, published 1940) associated with price rises and booms and then busts. But what is money varies in all cultures in time and place. This was recognized by one of the great economists of the 20th century, P.A. Samuelson [33], who carefully described the relation of money and time as well as money functioning as both a unit of account and a medium of exchange. However, these are arbitrary categories, based on one particular point in time in a unique cultural context and not necessarily a function of anything but an interpretation of generalized behavior in a certain modernity. Across cultures and modernities monies vary [34, 35]. Yet money like all commodities, can gain and lose value, just as the price of gold in currencies can vary day to day on markets, one can say that a currency can gain or lose value in what it can buy in other commodities at any specific time. We accept something as a unit of account and a medium of exchange by custom alone. Cipolla [36] has shown how accounting systems in some Northern Italian cities were invented based on the value of trade in commodities across several nations, languages and peoples and allowed traders to write letters of credit, to speculate on the value of shipments over time and place and to insure against loss.

Here we see a parallel with blockchain technology promise. If it provides cheaper and more secure inventories, records of exchanges and verifiable, uncontaminated ledgers, then it is a great advance. One problem is it represents the same problems of self-interest in all ledger systems. Just as recent evidence that Tether has been manipulating its stated premise of issuing coins on the basis of one coin to every dollar in a reserve bank account and using large sums of unsupported Tether units to buy Bitcoin [37]. More of interest in this is the Coincheck loss, it understates the possibility that the Blockchain is open to manipulation.

While auditors have traced the recent hack of their system and been able to pinpoint the time of entry, the first small withdrawal of a few coins, and then hours later the continued massive billions of dollars of coin withdrawals, one wonders why the system did not respond [25]? Obviously the system was hacked but that does not tell us why a Blockchain should be any safer than any other electronic ledger or a 14th century one. Keeping secrets is an ancient pastime, the first cryptographic device is often reported to have been invented by the Spartans. The Skytale, Figure 4, was said by a number of writers in antiquity, including Plutarch, to have been a coding device where one general or ephor could send a message to another which would be incomprehensible to anyone without the decoding means [38, 39] though some scholars question if it were only a verification device and some interpret the evidence such that it was only a message form [40].



Figure 4. Reconstruction of a Skytale. Source: <https://en.wikipedia.org/wiki/Scytale>.

We are told that account holders will be reimbursed at 80 % value, though the company may find it difficult to honor that pledge. Though it is argued that the individual XEM coins have embedded identifying data like serial numbers on bills, so they can be traced and perhaps located and blocked from being exchanged. This leaves the company an option to bargain with the hackers for a ransom which may represent an already estimate (the 80 %) of retrieved value of the heist.

INTERVENTION, REGULATION AND CENTRAL BANKS

In a widely read paper published in 1999, B. Friedman [41] queried why central banks were able to control the pace of spending in large economies by controlling the supply of *base money* (M1 and M2 of money supply or total amount of a currency that is either circulated in the hands of the public or in the commercial bank deposits held in the central bank's reserves) when this monetary base was so small in relative value to the size of those economies. The present effect of the Fed in the USA and other central bank actions in Quantitative Easing bond buying and in equity purchases supports this effect and the puzzle it creates. M. King (former Governor of the Bank of England) suggested in a paper the same year that the ability of central banks to intervene was due partly to the rise of managed fiat currencies as a substitute for commodity money of the past [42], yet he believed that the rise of electronic money would eliminate or severely curtail the ability of central banks to make these kinds of small but effective interventions. Certainly mobile payment systems like Square, Watch2pay, PayPal and others are growing around the world.

In 2003, several economists [43] proposed what has been called Bretton-Woods II where countries had come to peg their currencies to the dollar at an undervalued exchange rate producing export growth while maintaining a lower growth in domestic consumption than GDP growth (as in China) and then reinvested their earnings in the USA. This relationship

was associated with Ben Bernanke. However, in an article on June 13th 2007 as liquidity problems were beginning to develop, M. Wolf [44], of the *Financial Times*, argued that the world was in a *savings-glut* condition, with someone's debt as someone else's saving, but that low interest rates and other central bank policies had flooded the world with money producing a *money-glut* world.

Today we live also in a *money-glut* world produced by massive central bank money creation in bond buying, low interest rates as well as an extraordinary period of corporate borrowing. We have gone from one glut-crisis to another. Yet in the run up to the 2008 crisis, what economists like Wolf could not realize was that debt was being turned into money, especially home and car loans sold as bonds [45]. This debt was managed through quant algorithms [46] where the probability of failure was sold as risk in instruments called derivatives. Here people forgot what J.M. Keynes [47] had cautioned, they often mistook probability for reality.

Sassen [30] argues that the world of commerce is becoming more global and nodal with governments less able to influence corporate activities. This does not only affect taxation but the production of credit and the transfer of goods. The issue of money laundering and tax evasion have become a central issue [48], especially for those following the Coinbase IRS conflict. Coinbase is one of the largest virtual currency exchanges and has contested the legality of its clients' accounts being subject to examination by the IRS for both tax evasion and money laundering [49].

ABSTRACTIONS OF VALUE AND PAST EXPERIENCE

The USA has dealt with this situation in the past, since the collapse of Bretton-Woods, by various means as in the Plaza Accord in 1985-1987 when it was decided that a devaluation of the dollar was necessary in order to reduce the USA's current account deficit which had reached 3,5 % of GDP as violent swings in the money supply (as in the 13 weeks in late December 1981 to January 23rd 1982 had produced a 12,6 % increase) [50] and efforts had failed to end the recession. Milton Friedman, in a special to the *New York Times* also argued for a float in currency rates as the most efficient means of adjusting the value of currencies [51], though recognizing the damaging effects on some sectors of the economy. While M. Feldstein [52], former Chair of President Reagan's Council of Economic Advisors, argued in 2007 as debt and credit were exploding, that allowing for the depreciation of the dollar would cut the USA trade deficit [53]. By November of 2011 M. Wolf [44] summarized the global currency wars underway and predicted that efforts would continue by central banks to avoid deflation. Instead of devaluation of the dollar, today some economists, as J.E. Stiglitz in the *Financial Times* on March 31st 2011 [54], argue for modifications and extension of the IMF Special Drawing Rights as a new form of international currency.

What is interesting in all this is that Carthage established in 814 B.C.E. as a colony of the Phoenicians was the product of perhaps the first great global trading empire. Phoenician ships sailed from England to Arabia and Greece to the Niger River. They traded with a tremendous number of cities and nations with different currencies and ideas of money. Gautier [55] argues that Carthage began with the coinage and money of Phoenicia but as it reached the heights of its power in manufacturing, agriculture and trade, it abandoned this currency. This is hard to reconcile with the archaeological evidence produced by a number of sources like that of Visona [56]. It does seem that Carthage did not mint any money of its own before 400 B.C.E. and limited to certain kinds of transactions, as in paying foreign mercenaries in Sicily though even Rome often paid its soldiers in salt [57], yet often payments were made in weight until 350 B.C.E. Money appears to have been recognized as a commodity, but for which its bankers had produced a kind of token substitute of value.

Pseudo-Plato (ca. 100 B.C.E. in Eryxias) writes that at Carthage “... anything is wrapped in a piece of leather about the size of a stater. What it is no one knows but the maker. When this is sealed they use it as money.” A *stater* was a weight, often used as money in parts of Greece from the 8th century B.C.E. to about 50 A.D. Search for new commodities and in efforts to avoid middlemen sent Carthaginian *capitalist explorers* all the way to Lake Chad according to Plautus in his *Poenulus* (written in 189 B.C.E).

What Gautier has built on is from sources like Herodotus who describes a type of auction between Carthaginian merchants and local people. The evidence indicates that they engaged in the creation of an abstract form of exchange relating gold, silver, other commodities and currencies into a more effective medium of trade that some historians have called a form of *barter* [58]. Suzanne Frey-Kupper [59] describes a much more complex system of regional currencies created by the Carthaginians. One might consider this a formula, or set of instructions, in today’s jargon, an algorithm. In an interview with Ray Dalio, head and founder of the hedge fund, Bridgewater Associates, in the *Financial Times* by G. Tett [60], Dalio makes an assertion concerning the power of algorithms to predict events. One must recall that an algorithm is just a set of rules that describe a process. The word has a derivation from Medieval Latin but is often associated with the name of Muḥammad ibn Mūsā al-Khwārizmī, a Persian mathematician who died in 850 C.E. His name was Latinized as *Algoritmi*. Also, he is often referred to as the *father* of algebra, itself an Arabic word [61]. He may have derived his methods from Greek sources or invented them. Some Greek geometry, like that of Euclid can be couched as an algorithm, and one method for finding the greatest common divisor, is often called Euclid’s algorithm, found in his book, *Elements*, probably written about 300 B.C.E. One simply follows certain steps to discover the divisor.

In simplest form an algorithm is a set of instructions to solve a problem, but like many people Dalio confuses the concept with achieving a useful answer. This requires information and a knowledge on how to use or recognize the usefulness of the process which is also based on information and experience. Fabio Pardi [62] outlines this process in the history and uses of algorithms in science. Without precise information, an algorithm is useless and would be like a car with no fuel or driver. This impinges on von Mises [63] criticisms of classic ideas of money and its role in exchange. He rejected the idea of the neutrality of money, and rather placed emphasis on the relations between those buying and selling but even more he criticized the concept of the role of the velocity of circulation and focused more on the nature of exchange and the need of those giving value to each other. This is discussed among the various theories of economic behavior in antiquity and among simpler traditional society (what we used to call primitive peoples) in [64].

Media of exchange can be a good that is not consumed, it can be a wheel of stone in Yap, Figure 5, that sits on the floor of the bay and cannot be rescued but can be negotiated to exchange goods, though most Yap stone money seldom was moved at all, only used in transactions [65, 66]. In this way we can extend this example generally, as von Mises [63] put it, (people use money and by so) “... they barter not directly but indirectly through the interposition of a medium of exchange.” In a world of hundreds of currencies the Cathaginians apparently abstracted a means of integrating them all into a system of value. It may be that we are today on the verge of a reinvention of such a means of exchange on a new *global scale*.

Carthage, described as a *commercial clearinghouse* was ruled by a merchant aristocracy whose treaties and policies were aimed at developing and extending markets. A general emphasis on gain was paramount. This behavior was notable, and like that of Crete in the time of Polybius (200-118 B.C.E.) where its people were famous for their greed and desire for trade and money, the contrast was with Sparta where money was despised and land was divided equally among the people [67]. Yet their iron *money* was augmented in dealings outside



Figure 5. Yap Money. Source: <https://en.wikipedia.org/wiki/Yap>.

of Sparta. This was, according to Polybius, not the result of Sparta's constitution, but due to actual events as Sparta became involved in war outside of the Peloponnese, a victim of necessity. Xenophon is less harsh in his description of the Spartan situation and describes them not as imperialists, but alliance builders [68]. As B.W. Wells [57] put it, "What law was to Rome, profit was to Carthage". While there was a degree of suffrage in the election of officials (*suffetes* and generals), Carthage could be compared with independent Venice or 18th and 19th century England in government and policy.

THE IDEOLOGY OF *DISRUPTION* ON CONSUMERS AND PROVIDERS

So if everything that is used as a means of exchange becomes electronic, can be saved and yet is vulnerable to theft by the creativity of hackers [27] little really will have changed. People will still use *money* though as J. Fagerlie [69] describes the money of the ancient world, it will lack a physicality that the objective *barter* of Mises possessed, Still the people the Carthaginians traded with and exchanged goods and value must have had some degree of difference that was calculated into transactions, as today we find *weak currencies* affect the outcome of traders vs those of *strong* ones and affect the day to day purchasing power [70]. On the other hand, Carthaginian culture resulted in "... a power founded on profits and profiteering, a disintegrating sand." as B.W. Wells [57] put it, where the nature of individual self-interest and a lack of a greater sense of purpose had resolved the government *into mere business*. The individualism of world currencies, just as the policies of banking and credit in the past decade, may seem as self-centered and narrow as the policies of the Carthaginians some 2 500 years ago. While world central banks continue to protect asset classes and avoid deflation and inflation (quite a balancing act), the only substantial effect seems to be rising inequality [71]. I find that arguments that claim world inequality is falling while within developed countries it has risen are flawed, and in a recent publication I show some of the central problems with World Bank methods in the data they use [72].

This is not the most important problem to develop since the 1970s as data show [30]. The production of government debt to support deficits in banking and finance have risen dramatically and gross public debt stands at unsustainable levels [73], Figs. 6 and 7. Since 2007 government central banks and government actions to cover banking losses have only continued to expand world debt. Central banks have dropped bond and borrowing levels to zero and into negative territory to maintain the economic system. It seems obvious that capitalism has reached a new level, one where it can only survive by continued and accelerating government intervention and support. I call this new period of capitalism the State Asset Valuation Modification Economy or SAVME for short. How this will end is unclear, but it seems unsustainable and while private companies are increasingly locating profits in tax shelters, while public companies are engaged in borrowing to increase buybacks

of stock and increased dividends, the concentration of wealth continues. The chart in Figure 6 shows the increase in credit to GDP since 1970 and we can interpret it simply as indicating that compared to debt, costs to produce products in 1970, you will need the equivalent value of almost 70 % more today! But since the principal of debt is being serviced at such a low rate, given the central banks' policies, debt costs are low. This trend has continued into the present.

As J. Kay [74] has remarked using the figures from [75], economic inequality decreased from the 19th to mid 20th centuries due to progressive taxation and public spending. It has increased due to decreased progressive taxation, increased debt and reduced public spending. Perhaps we have too much money, with corporations and wealthy individuals hoarding cash it might be time to destroy some of this value. In a electronic world this could be done at the flick of a key. As we saw in the drop of the stock market, home loans and other financial instruments in 2008 of about 22 trillion US\$ according to the GAO (<https://www.gao.gov/products/GAO-13-180>), wealth can disappear, as in the Coinbase *loss*. Perhaps, as Polybius argued, the key to power

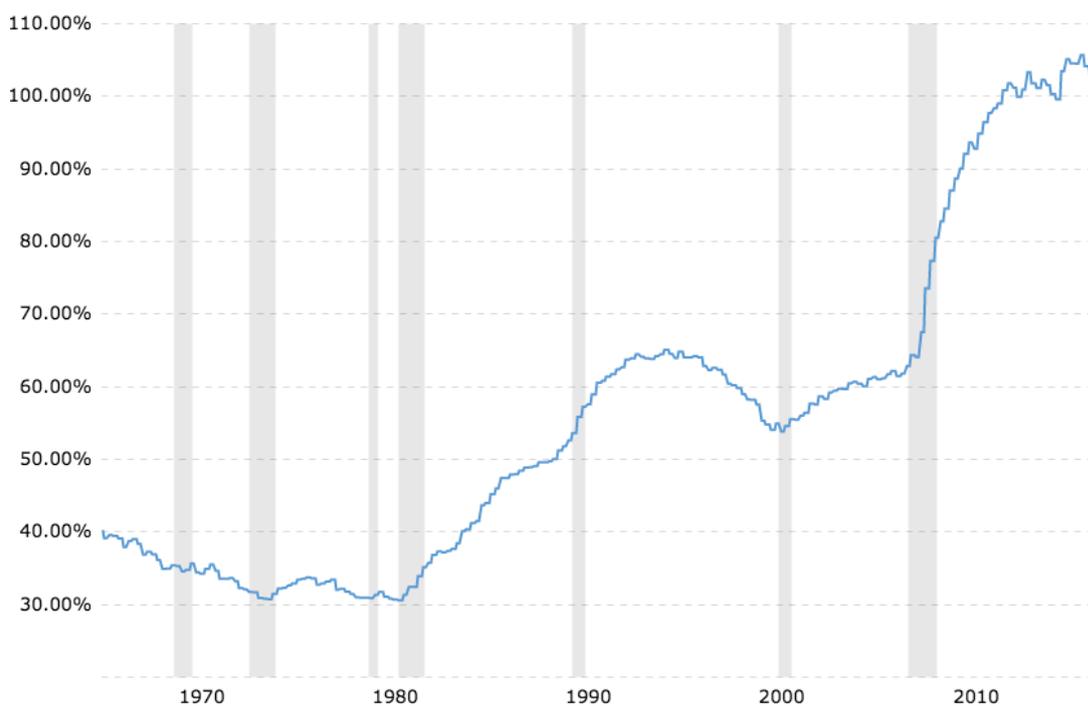


Figure 6. Historical trend of the Gross public debt. Source: <https://www.macrotrends.net/1381/debt-to-gdp-ratio-historical-chart>.

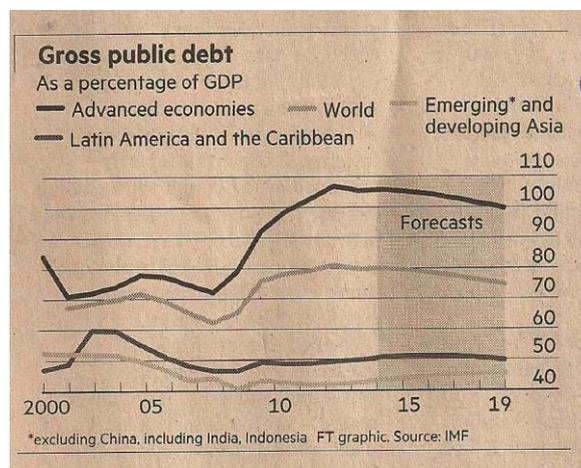


Figure 7. Increase in credit to GDP. Data from the Financial Times.

and stability is the constitution of a society and how it balances the claims on wealth and power. While he finds the constitutions of Sparta, Carthage and Rome to be similar, and he was most favorable to how Rome's had achieved a balance of that power, what he could not see in Rome's future was how the constitution would be destroyed. In that, as Appian wrote, inequality was the significant disrupter [76].

Some theorists like C. Harwick [21] argue that *distributed technologies* like Uber and Airbnb that link producers and users via an application benefit consumers. This is certainly a substantial claim, much evidence indicates the contrary, like Uber undermines taxi use it mainly draws from public transportation adding to congestion and pollution. It also pays no taxes as taxis do, shifting taxation to other services or production, so consumers just pay more or the same in other ways. As for Airbnb a similar tale appears, hotels lose guests and cities tax money, neighbors find their homes noisy and communities become more crowded. The benefits may be distributed (mainly to the investors from citizens and consumers) but the costs are not reduced.

Is reducing costs the most desired outcome, and can we over look other related effects on society? In addition to those mentioned we find as computers become cheaper and faster the effect on human lifestyle across cultures has had the consequence of creating uniformities that might not be considered positive. This does not just include the nature of work, relation of residence to work or family, but as R. Tomkins [77] suggests from a review of usage of electronic devices in peoples' lives, most significant changes due to them are in viewing pornography, trading stocks, shopping and working on family genealogies. Seems again like the raging IDs of the Krel: sex, gambling and fetishes of the past. As described in a recent book [1], the parallels between human society and those of other animals with complex social life are striking and the *connection* people are becoming accustomed to seems increasingly like the hum of the hive and the trail of the colony in bees and ants [1]. A process like conditioning is underway and today we see a quarter of United States adults saying they are online constantly [78].

EFFECT ON GOVERNMENT

An article by M. Murgia [79] on Uber's appeal for a license to operate in the city of London, addresses the issue if the company is *fit* to operate there. It would seem prudent for the Transport for London (TfL) to carefully study the effects this company and other ride hailing schemes have had elsewhere.

A study by the San Francisco County Transportation Authority found that 6,5 % of the weekday vehicle miles in the city were due to Uber and Lyft drivers, over 570 000 miles daily [80]. Getting information from Uber has been difficult for cities and San Francisco has had to sue the State for traffic data supplied under statute to state agencies; but Uber has blocked release of it claiming it as confidential data [81]. City agencies have reported more than 45 000 Uber or Lyft drivers in the city creating a daily increase in congestion with most coming from out of town.

While Uber is yet to make a profit, it has a substantial financial backing allowing it to continue to undercut taxi service and mass transportation while paying no tax to the city. Uber and Lyft have been found to be draining riders from not only taxi service (which pays tax) but from mass transit [82]. The result of this, while draining public funds from transit service, has been to clog the streets with their cars increasing traffic, blocking streets while picking up or delivering passengers or waiting for fares.

A separate study by the San Francisco Police Department (SFPD) found that Uber and Lyft drivers have been responsible for over two-thirds of all traffic violations in the city of San Francisco [83].

It would seem to a reasonable person that these are negative impacts and should not be rewarded with a license to operate in London or any venue. The TfL, however, will likely find itself mired in a considerable legal swamp by Uber. An article in the San Francisco Chronicle [84] regarding San Francisco's Municipal Transportation Agency's (SFMTA's) failure to deal effectively with *ride hailing* or Transportation Network Companies (TNC) like Uber, beggars belief. One need only refer to the California Public Utilities Commission (CPUC) press release of September 19th 2013 which announces the CPUC authority and regulations on TNCs. Not only was this information sent to interested parties in the state (and certainly was received by the SFMTA), but the taxi companies and unions complained of the TNCs as illegal. The CPUC had sent cease and desist orders to Uber and other TNCs in October of 2012. This information was widely disseminated (see e.g. <https://www.forbes.com/sites/tomiogeron/2012/10/08/ride-sharing-startups-get-california-cease-and-desist-letters/#fdcb551d3fc1>). If the CPUC was aware of the TNC's violation of taxi rules, then certainly the SFPD, which is involved in regulating taxis, should have notified the SFMTA; obviously someone did notify the CPUC. However, the very fact that somehow Uber was able to operate without a licence where strict enforcement of illegal or *gypsy* taxis was quite effective is still a mystery. It is also a mystery to discern how the TNC's benefit the public given all the negative effects they produce.

MONEY, SCRIPT, BANK MONEY AND COUNTERFEIT

While the creation of cryptocurrencies is a distraction for many people, it does use up time better used in productive endeavors. Certainly manias affect populations across the globe as noted in surveys of ideas of credit and money crises [85, 86]. Barclays bank analysts [24] characterize bitcoin holders as *infected victims*, those who are curious as *susceptible* and no cryptocurrency holders as *immune skeptics*. The language of the cryptocurrency craze has taken on a character typical of other examples and pattern mass psychogenic disease [87] in general as the aspect of gambling interfering with rational consideration and balanced information also parallels millenarian movements [88]. In America in the 19th century waves of bank notes served as money, often considerably discounted across the country with usually disastrous effects. The rise and fall of the value of such paper money represented periods of boom and bust and irresponsible credit expansion by banks that were run by either incompetent individuals or unscrupulous ones. Still, to a certain extent, in many areas of the country and at various times such script produced by banks of all kinds of solvency, could stimulate trade and industry [89]. However, the individual losses were substantial as was the interruption of commerce by runs on banks, discounting ever depreciating value in the notes printed and collapse of businesses and banks due to lack of funds, liquidity and fraud. One might say the appearance of cryptocurrencies has initiated a new dawn in investor naivete and provider duplicity. *Buyer beware* has taken on a new meaning in this new technology. It is not so much what is in your pocket that is a danger, but how connected your wallet is to the internet that counts.

As I described in a short comment in the Financial Times in 2005 [90] during the run up to the credit crisis of 2007-2008, people become possessed with the idea of value and the *growth* of investments, like a primitive feeling of crops growing and the potential of stock multiplying. This is seen in many examples in traditional societies from the currency of Yap to the *cargos* of Mesoamerica [65, 86, 91, 92] yet it can become a disease, a possessed love that overcomes rationality or self-interest and sets up panics and tremendous loss in a form of anthropogenic or human psychogenic disease [64].

CONCLUSION

I have a positive view of ecommerce, the internet and the invention of software and algorithms that are applied to daily life. I think that it can be instrumental in reducing

pollution, waste, garbage and crime if products can be made that will be neo-ephemera, like blogs, podcasts, video games, webstreaming movies and experiences that are sold and shared but not packaged or physically requiring an actual presence. As opposed to my earlier reference to Forbidden Planet and the Krel, I think there are problems with mass culture as there have been since the invention of the printing press and radio.

By linking minds across generations, nations, cultures and families instantaneously, electronic communication can engage millions of minds achieving the ideal democratic forum believed possible with Radio by Bertolt Brecht. Often we find critiques of the internet and electronic devices focus on the lack of a reference to nature in peoples' lives, of the constant attention to connection, something like brain-washing rather than personal relations and solitude. This can be seen as how we used to view the insect societies, as monolithic superbrains (e.g., as in [93], modified by B. Holldobler and E.O. Wilson [94]). But these connections seem also to promote collaboration, creativity and sharing. Perhaps in vertebrates this can be different, as in naked mole rats [95] where dense living conditions and subterranean life have resulted in behavior different from most rodents with slow developing brains and very unusually long lifespans. In fact, the time to develop large brains and produce parental care and generational social organization seem to go together, though prairie dogs do not achieve such long life spans.

A human superorganism may provide an opportunity for long life, extraordinary learning, low labor demands and reduced population, pollution and destruction of the planet. Certainly the excitement and creative energy associated with the community of software designers and marketers is evident in interviews of individuals where even crises create inspiration (e.g. [96, 97]) and in the pages of trade magazines like Bitcoin as well as my own fieldwork. The future will be formed by the ability of this enthusiasm and openness to continue to exert itself in a ethos and ethics that can overcome the tendency of corporate culture to possess technology and control it as in the recent exposes as in Facebook and Cambridge Analytica.

As the Krel had attempted to use their knowledge and math to produce a perfect system of learning and training, and by it a world that they were superfluous to as they had not considered the emotional and primitive needs of being organic Krel, humans today may find in the politics that emanates from their technology a system that projects their primitive passions in ways that are destructive and ignorant as a factless world becomes reality.

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