

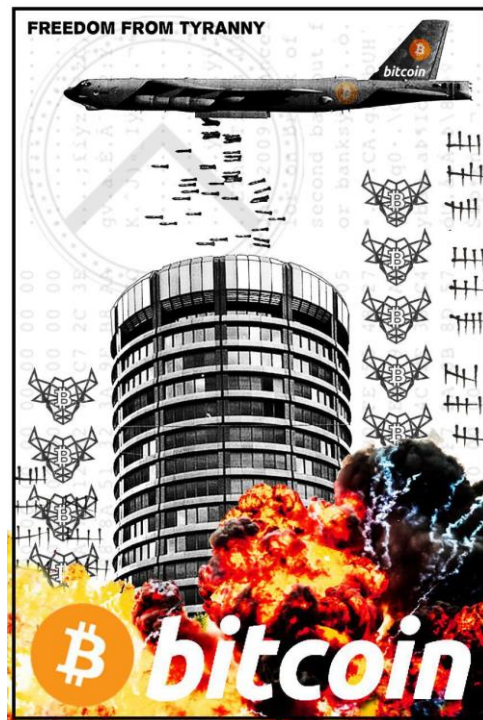
# THESIS

Karo Zagorus

2020



*Examining how our trust is being breached and abused, how we are used for rent-seeking, how governments impoverish us through the use of Monetary Nationalism and examining whether Bitcoin is the solution to restore individual freedom and limit the reach of government.*



*Art by Made X Forever*

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### *Foreword*

Bitcoin. Often when we utter this one word, even as part of a question, we can never know what response we will get from those who we say it to. If we are lucky, majority of those who we will interact with have little knowledge of what Bitcoin is. Even less had the chance to hear about it, a fraction of that knows what it is used for, how it works, how it is created or what is the basic underlying principle of the entire system that is called as Bitcoin. (Taiberg; Bogart; Capital Creators)

There might be some cases when we manage to come across someone who have heard about it and understands the basic speculative spectrum of it, who will then immediately dismiss it as a vaporware tulip mania that is destined to crash to zero. (Cheng; De) Often these answers come from well-educated and knowledge individuals who have some or vast experience in the field of speculation and trading. (De; Monaghan; Golumbia) Since Bitcoin is not backed by any government or any scarce natural resource, they immediately arrive to the point of dismissal because they do not understand how it works or they cannot comprehend how “magical internet money” can have any value proposition at all. (Ossinger; English)

But, if we dig deeper and are extremely lucky, we might reach one of those select few out there, out of the more than 30 million early adopters (Szmigiera), who partially or actively, interact with Bitcoin as of today. These individuals are the biggest question mark in Human History. We must ask the question, why these individuals went as far as to personally elect to use Bitcoin. Some of them mention a multitude of reasons, some among along the lines to invest into it, to speculate on the price of it, store value, protect personal assets from hyperinflation and to escape the reach of authoritative governments. (Bogart; Bohr and Bashir) Some might dismiss it, but it is apparent that Bitcoin is spreading, rapidly, according to a research done by Blockchain Capital, among members of the public, and as of today, we have still failed to find reasons why this is happening and what is causing it. (Bogart)

In today's world, (Hughes; Servon) there is an underlying problem related to the generalization of distrust towards aspects of modern-day institutions such as banks, money, and politics within not just Western Democracies, but in various parts all around the world. (Edelman) The order of trust, or similar forms of it that we perceive it, as of today, is being constantly challenged by outside factors in our relative space that we live in that seem to force members of our society to start exploring alternative solutions for their daily problems. (Fukuyama; Servon) Since Bitcoin, the mother of the Blockchain technology, seems to

promise a future that brings us further liberty and financial freedom in a world that is riddled with exploitation and injustice. But this comes at a cost of a potential complete reformation every aspect of civilized life. (Swan)

Since as of right now, it is a matter of urgency that we research this extremely disruptive technology that forces a potential civilizational evolutionary transition on us, we must begin researching it immediately. But as an unfortunate fact, very few academics are actively considering the sociological and anthropological consequences that could result out of the few of available research focusing on Bitcoin. (Bohr and Bashir; Bashir, Strickland and Bohr) Considering the fact how fast the Internet became wide spread in the world, and now how much depends on its actual operation, we can see that there are clear parallels among the line between it and technology that are built right onto of the internet. For example, Social Media needed over 10 years to reach its current active userbase, and even in some countries, platforms like Facebook are the actual internet for those with access to it on their mobile devices. (Mozur; BBC Trending)

If we introduce in a new technology like Bitcoin, running on the internet and fulfilling all monetary aspects of currency, while society maintains its value through social consensus, hyperbitcoinization, (a hyperinflationary demonetization event in which fiat currencies exit usage by the decision of the free market (D. Krawisz)), might not be decades but just a couple years' time away. (Ammous; Bogart) Since Bitcoin is an antifragile system, that creates negative black swan events for its competitors, the deriding effects resulting from its adoption must be further subject of studies. (Taleb, Antifragile; Taleb, The Black Swan)

We will now venture into this hidden world that so few can call themselves a part of. We will discover the reasons why it exists and the mechanisms that keep it alive and make it revolutionary.

## **I. Introduction to the Dissolution of Trust**

Ever since the beginning of time, trust was and is still a necessary element for human progress. In a world of survival and beyond it was the essential tool to provide humans with friendships and alliances. Without trust, many elements of our modern-day society would not function, services provided to us would cease to work and to exist. Kings would have not ruled over lands and anarchy would have gone rampant in the whole world where everyone, is to themselves and nobody else can be trusted. Without this being possible, we would have not seen such human development across the two millennia. (Fukuyama)

Group formation's essential element is trust, this is how people with common interest were able to group together to survive, to build families and empires. For one man to go beyond the creed of the family and form relationships, trust was imperative to establish these connections. (Fukuyama)

Our ability to form trust is an essential human trait that enables us to establish relationships with entities and other human beings. Often this is difficult because trust is not a very morphable human trait, but something that is built or earned over time; although we can trust also blindly if situation is given. This inherent ability to trust, has cultural, religious, and political roots. Depending on the individual, where one is born, decides what will be the inherent cultural programming of the characteristics of this ability to trust. (Fukuyama)

In today's world, trust governs many layers of society, (Fukuyama) for example when we chose political parties, we can either vote under personal principles or by beliefs, onto candidates who, we trust or trust to a certain degree that they will be more effective at governing a country, and will not impede on our trust and support by embezzling funds, impede our rights and freedoms and turn a democracy into an oligarchy. When we call the Ambulance, Police or the Fire Service we believe and trust that they will respond and provide help in the time of need because they serve society independently that of its affiliation and citizenship, humans in need will be provided help in a functional country with a functional public emergency services system. We believe that the medics in the ambulance will be well trained, that the police will be impartial and not ask for bribes, and that the fire fighters will risk their lives to save those who are in imminent danger. We trust that agents of security services of our nation work tirelessly to avert dangers, prevent terrorism, and disrupt most forms of espionage without impeding on the rights, liberties, and privacy of its citizens.

When we put money into a bank, we trust the institution, that it will be responsibly managing our money and not spend it, not lend it out recklessly, not charge us exorbitant

fees and embezzle our money through questionable investments and loans. We expect contracts to function as is written, that attempts to bridge trust especially in low-trust cultures, like when we sign up for a Mobile Service, Health Insurance or Car Insurance, we expect and trust that the service provider will not breach that contract and charge us extortionate charges or fail to pay us if we file for an insurance claim. We also trust that a central bank will maintain a healthy monetary policy. That it will not go rampant with its ability to print out countless amounts of fiat money, with that over inflate the currency that we use, that it will keep our economic interests at the forefront to keep the country competitive and that the money it creates wield value and others will accept that form of value as a monetary unit of account. We can also trust blindly others, like neighbors, that they are not going to attempt to breach into our house and/or threaten our lives.

We expect that our legal system will work and function as normal, under the guides of the constitution and present laws, protecting society from harms, mediating conflicts, and enforcing contracts. When we go into a supermarket, we expect that the food products sold there are safe and won't damage our health or worse, and that other products are safe, we trust that the consumer safety governmental organizations will provide necessary guidelines to create this safety net that we can rely on, that will prevent others from selling poisonous food or electronical equipment's that are defective, that can fire hazard or cause cancer.

Trust is also necessary for economic progress and for the creation of prosperity. (Fukuyama) Functional economies in the modern world require the formation of businesses and their expansion to create progress and this can only be accomplished with the accumulation of wealth. (Fukuyama) The money everyone makes and earns today is also based on trust; its subjective value is based on nation states that give fiat currencies value through exercised enforcement of value through the means of National Monetarism. (Ammous) Often people don't consider money such an important matter, but as it is, it seems we are undervaluing its importance to society, (Ammous) because without any form of currency or unit of account we would have not had a formation of any country, (at least initially). (Ammous) soldiers would not serve their kings if they did not receive a form of reward that was of value. These in the early days were usually in the forms of dowry or a valuable animal that they could use for husbandry and later as transition happened towards gold and other units of account made it possible to better store value over time, this created prosperity and allowed empires to rise or fall. (Ammous; Fukuyama)

Small family businesses are also trust based, the father, mother or son also works at the company, but as the company keeps prospering and producing goods, making more

money it becomes necessary for it to keep expanding to maintain its own competitiveness which essentially requires members of the family to start devolving this trust and decentralizing it. (Fukuyama) The ability to incorporate was a turning point that allowed families to turn from sole owners into shareholders. When small family businesses turn into megacorporation, they essentially become extremely hard to manage alone and this is where it becomes difficult in certain cultures to trust others with the leadership of a company that they created and lead for years. Therefore, trained management became necessity to consider and hire. (Fukuyama)

Large companies like Apple, Mitsubishi, Samsung, Sony have all went through these phases and still exist as of today because their transformation into international organizations was made possible by the decentralization of trust while still making it possible for shareholders to maintain oversight over the operation of the companies. If competitiveness would have not prompted the families (those who operated small and medium sized businesses) to incorporate their business, there would be no possibility for the creation of prosperity. If Steve Jobs would have not partner with others when it became necessary to come out of the garage, we would not have fancy electronics such as like the Apple iMac Computers and iOS Phones and Tablets. If Bill Gates would have not formed Microsoft back in the day, we would probably use something different than Windows. If Larry Page and Sergey Brin would have not trusted each other, we would not have Google the Search Engine, nor any Android smart phones. (Fukuyama)

In a normally functioning society, we expect these to function properly, which serve as the basis of our lives, our country, and its economy and that of the world's.

When we start facing problems regarding our trust in others, when others step past our trust's boundaries, when they impede on that or abuse it, then we start facing problems and begin to distrust others. Distrust makes it much harder to establish trust in others. (Edelman; Fukuyama) If our trust is abused, chances that it will get permanently damaged and distrust will inhibit the formation of trust. It will make it difficult for example to trust politicians if they often become corrupt, it will be difficult to choose new candidates and chances that people will not go to vote any longer due to their distrust of the system. (Edelman)

We will distrust the police more if they are abusing their authority. We will distrust banks if they are misusing our deposits or fail to be held accountable. (Fukuyama) Central Banks can also betray our trust by overinflating our currencies to create more immediate value for themselves and steal from its citizens throughout inflation. Similarly like in the

case of Venezuela, where the value of the Venezuelan Bolivar has gone through a hyperinflation and because of that Venezuelans must barter every day or use US Dollar notes to buy goods and to access services. (Ammous) This ability of central banks to inflate the monetary supply has made it possible to wage unlimited warfare and also apparently served as the cause of both World Wars. (Ammous) After World War I, Austria faced a hyperinflation because it has begun printing out more money than the gold reserves that were available to backing its currency and therefore the Austrian Crowns have lost a tremendous amount of value because of the reckless printing of money. (Ammous) Germany after World War I also have attempted to pay back its reparations using inflation, they printed out unlimited amounts of Deutschmarks to finance their debt but instead it has led to the collapse of their economy during the Great Depression. (Ammous) Previously, wars before Monetary Nationalism required rulers to tax subjects to fund wars, and these were limited in scale and size. (Ammous)

As of today, it is apparent that we are living through the crisis of trust. Until recently there been no ways to eliminate the abuse of trust. This abuse of trust seems to endanger the networking of human beings, which is required to promote progress which in turn allows the creation of shared prosperity in society. (Fukuyama; Nakamoto, Bitcoin: A Peer-to-Peer Electronic Cash System) And this long standing vacancy for alternatives made it possible for others to abuse this trust, repeatedly, especially within the United States' banking industry. (Servon)

The 2008 Global Financial Crisis has also accelerated this problem. Today we are facing an increasing trust problem, the erosion of trust or possibly the establishment of distrust, as shown in the Edelman Trust Barometer. It shows that trust is on the decline globally, at unprecedented scale as never seen before. (Edelman)

In this Thesis, I am set out on the journey of examining this problem that we are facing today, by looking at core institutions of our society and examining them and seeking out why they are not working as how we are expecting them to work.

We are going to explore pressing matters that affect our daily lives and continue to challenge our world views. Events that have played a pivotal role in creating the hypothetical destruction of trust within society. (Edelman) We will look at certain possible causes of this dissolution, we will examine and contrast American events to Hungarian and other ones and attempt to correlate them to the given problem.

The research methodology will consist of examining empirical evidence of the mentioned effects and processes. Later with this we will weight their importance and see

how they are contributing as a main driving force towards the adoption of the potential solution. (Nakamoto, Bitcoin: A Peer-to-Peer Electronic Cash System) By examining historical events and currently ongoing issues, we will see how trust is put to a test in today's world. Only by this we will be able to figure out what is truly going on (Andersch; Pritzker; Prentice and Clown; Huebner; Ammous; Adler) and it will allow us to better understand why people do what they actually do to bridge or solve this problem permanently.

### **A. The Unbanking of Trust**

Ever since the start of the 2008 Financial Crisis, the factor of trust been an ever-increasing problem. (Edelman) Trust since 2008 has been on the gradual decline. (Edelman) This is a big problem, because many of our systems demand some amount of trust to function properly. We often must trust politicians who also interact with our financial system and legislate laws that make changes to monetary policy. We also must trust other third-party banks or money processing third parties like PayPal, Venmo or CashApp to handle our transactions. (Servon) Banks and other payment processing third parties (E.g.: MasterCard) are essential for us to make daily transactions; to buy food in shops (physically or on the Internet) with debit or credit cards and are often required by employers (for example mostly in Europe) to receive their monthly wages. When financial institutions begin limiting access to their services apparent problems started to happen and it becomes much harder for those who seek lines of credit to get by. In the US there has been a transition from using lines of credit for the wants to the needs and essentials which dramatically increased their usage and their demand. (Servon)

Banks, up until 2008, have thought of themselves as invincible institutions who were protected from the dangers of financial collapse, where central banks would attempt to bail them out with fresh government money to provide liquidity for their services. But this have changed in 2008 when the Federal Reserve of the United States has refused to bail out Lehman Brothers. (Servon) This has caused a massive cascade of bank failures in the United States and abroad, and intensified the global financial collapse. (Servon)

Banks, during the 2008 Financial Crisis in the United States, have resorted to restructure debt and close off credit lines to debtors who suddenly found themselves in hot water. According to Lisa Servon, there been many issues preceding this problem starting from the 1980's merging of Residential and Investment Banking Sectors (Federal Reserve Bank of St. Louis), the racial bias in credit worthiness reports and the under rating of client's credit rating from Prime to Sub-Prime which came with higher interest rates. Ever since the 1980's Banks transitioned from serving the people towards serving their own interests (Servon) by eliminating the access of middle- and lower-class citizens, who are financially struggling<sup>1</sup>, to have an active and affordable bank account and imposing trickery through

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<sup>1</sup> According to the book by Lisa Servon about 128 million US Citizens are struggling daily to make a living. (Servon)

contracts that increased the fee profits of banks. This sudden change of focus for banks towards a fee based profit structure driven people away from them, forcing those with less income to choose alternative financial institutions such as Check Cashers like RiteCheck in the State of New York and Pay Day Lenders in other parts of the country where it is legal. (Servon)

Those who were luckier not to have their credit line taken away permanently had seen their yearly interest rates go up dramatically due to being put also into Sub-Prime credit category automatically when automated systems de-risked outstanding banking debts. This have directly led to the question whether Banks have lost any sense of social responsibility they have once had towards society. (Servon) As it appears, in the past this was not the case, when Residential branches were still separate from Investment Banks. A transition of change has gone through where banks have completely lost touch with their clients and were no longer worthy of any meaningful consideration due to complex state and federal regulations and requirements. Contracts began to ever increasingly dictate how far this relationship can go and it have physically alienated clients from these institutions to limit down the legal liability of banks. As bank contracts were to become ever increasingly complex and more difficult to navigate the more responsibility have fallen onto the client (Servon) to understand the terms of service, the free structure and other conditions, some of these conditions banks did not have to communicate towards the client and enabled some banks to restructure debits from accounts in a way that incurred an extortionate imposing of overdraft charges onto account balances. (Servon)

In Hungary, Erste Bank was the prime example of how Banks have lost contact with reality (Anon1) and no longer consider the human factor of reality in comparison to example cases in the United States. (Servon) When the crisis has hit in, Erste Bank has decided to immediately shut down or limit down the credit card line of account holders who had alterations in their employment. (Anon1) Those debtors who taken up Euro based loans were also hit with increased overall monthly installments that were difficult for them to finance. (Emese) This resulted in their accounts immediately being closed, later the bank has neglected to accept repayments of all outstanding loans from debtors who were attempting to keep repaying their debts. Instead they were continuously misled by Erste Bank representatives. It was revealed that they were only repaying their own credit card debts and no other loans, and late fees and interest piled up on their original outstanding Euro based debts. (Anon1) Later Erste Bank sold the outstanding loans of debtors while refusing to negotiate, restructure debts or consider other factors from debtors. (kasnykm) Instead it has

decided to shut down repayment and sell the outstanding debts to debt collecting agencies like Intrum Justitia for a fraction of the total loan cost<sup>2</sup>, (Portfolio.hu) who then proceeded to use questionable ethical and moral standards to pursue debtors. (kasnykm) Instead of offering option to have a reasonable timeframe and restructure debts. Erste Bank debtors in Hungary suddenly found that they are now forced to repay their original loan's double amount back to the new creditor, (Anon1) because a loan collector has imposed additional fines up to the original amount of outstanding total debt. This resulted in making the debt look like it is the original amount being repaid all over again. (Anon1; kasnykm) This for many has proven extremely difficult in Hungary and a wave of foreclosures has started threatening the lives of many families in the country. (Emese) While the Hungarian Government at that time attempted to give help for families, these protective nets were slowly removed and clients were forced out of their homes either way. (MTI; Márk)

This amount of low diligence exercise by banks to look out for the financial safety of clients seems to show that there is indeed no longer any informal moral relationship existing between client and bank. (Servon) This seems to correlate with the European examples also (Anon1; Servon). The problem had unwarranted consequences. Banks often abuse for their own gains by liberally using banking contracts to impose fines and other financial penalties onto consumers who have an exceedingly tough time paying, especially in the US. (Servon) Therefore, it is apparent that clients for banks no longer have any value as in sense of being a person, and instead what dictates decision makings are government by the hard-coded rules of the contracts that can make or break a relationship. This is one reason Bankers cannot fully communicate or befriend clients, banking contracts must protect a bank from all forms of liabilities while attempting to conform with state regulations. (Servon)

The differences between European banks and US based banks are quite stark, there are more Europeans with bank accounts with access to services on the internet and mobile banking than Americans. (Servon) Un- or underbanked Americans do not have the luxury to purchase goods or access subscriptions on the internet. Therefore, other third-party service providers come in as a solution provider (like RiteCheck) to make it possible for those without a bank account or one with limited usability to be able to access services. (Servon)

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<sup>2</sup> Similar trends can also be viewed connected to Payday lenders in the United States where these lenders often give non-compliant or non-paying debtors loans to collection agencies whom later able to change the terms of the loan and impose higher fees or late payment added interests on the debtor's total outstanding debt. (Servon)

As it is observed and concluded by Lisa Servon, banks do not respect us anymore and do not consider us as customers. (Servon) Instead, this have evolved into a relationship where a one bank competes with other banks to attract more customers and by that drive up their profit margin by misusing customers as just a number in the quarterly profit report. (Servon) More and more are looking for other alternatives that give them a much cheaper or even freer access to financial services, alternative financial institutions or so called Fintech companies are already attempting to provide solutions. (Servon) While banks are actively taking part in risky financial activities and these can't be audited by anyone. The results of the 2008 crisis have caused mass foreclosures and indebtedness, personal bankruptcy cases have also increased.<sup>3</sup> (Servon) The main culprits of the Financial Collapse have not been charged and nobody was legally charged for their questionable financial activities. This raises the question that nobody has been sentenced, whether this has been made justified because many people have fallen victims of this crisis and since only at least one person was sentenced and fined in such manner. Certainly this decision is not going to deter others from doing such activities in the future. (Cohan; Deener) Since nobody was charged, there was no crime committed in essence, giving space again for financial irresponsibility in a world where banking secrets keep up a fragile system that Central Banks control. (Ammous)

Since Banking institutions cannot be audited by individuals, we cannot assure their safe operation and that the bank complies with US Federal Financial Regulations. Therefore, we are fully at their own discretion of how they are operating. (Ammous; Nakamoto, Bitcoin: A Peer-to-Peer Electronic Cash System)

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<sup>3</sup> It should be noted that for example in Hungary, it was not possible to declare a personal bankruptcy until 2015. Up until that time the absence of this law made it much harder to repay debts that are impossible to finance any longer for individuals, but in no sense does it completely eradicate the debt of debtors and their responsibility to repay outstanding debts towards creditors. (OTP Bank)

i. *The Unbanking of America*

Lisa Servon's *The Unbanking of America: How the New Middle Class Survives* has in essence failed to discover the root cause of the problem and only examined issues facing the American population from a problem-solving angle. On layman's terms it is more logical but nowhere near enough to solve the issues that the people of the United States face every day. Lisa Servon has failed to step outside of the box and examine truly alternative financial solutions that could potentially inhibit the negative effects caused by the legacy banking system. (Servon)

This is although not a failure of her research, it can only be attributed to the research methodology and Servon's approach to the problem that she was examining. When Servon selectively went to fintech organizations she has failed to realize that one of the companies were already using a type of blockchain technology that was developed in house. Even with best of attempt to reach her for a comment via email there been no response, therefore it is not possible to know why she has not examined the predecessor technology as a potential solution. (Servon)

This unfortunately resulted in an incomplete conclusion in her book. The financial system's original problem rather denotes that she was skeptical of any separate solution because of its possible outlandish nature, non-state operated digital currencies in this to separate state and currency from each other and give back the power into the hands of the people via established social consensus throughout the free market. Her inability seeing this, is a very important factor that can be directly derived from the conclusion. (Servon)

But other than that, Servon have managed to shed light on the important daily issues Americans face every day. She has shown that banks now seem to be passively isolating and alienating customers from the banking system. She showed us how slow the system is to clear checks; how alternative financial companies are trying to speed up check clearances and how Rotating Credit and Savings Associations were giving lifelines for individuals and small family companies. She did so while exploring their inner workings and complex trust based structures. (Servon) When Servon examined how contracts at banks work, her discovery confirmed the hypothesis that these types of strict contracts make it impossible to build a relationship with low- and middle-income customers, since banks have to consider mitigating risks that their services bring. (Servon) She also found that the regular change of ownership of small branches further divide communities. When a bank changes hand it often changes its overall brand and makes its overall perception to others alien. If we have trusted

a bank like Bank of America a few weeks ago, we might have a difficult time if Wells Fargo takes over our local branch's operation and completely replaces the staff working within that bank. (Servon)

Her work has proven that Check Cashing organizations are more human oriented and give much direct feedback to customers than Banks do. Check Cashers with their straightforward fee structures are much more understandable than complex banking contracts and fee structures that are often designed to force consumers to fall into fee traps. While these organizations might be called predatory, (due to their higher than average prices per transaction), similarly like as Payday Lenders in the US, it often the only available option that can provide lifeline for American consumers who have no other option left in a system that seems so much set against providing easy access to banking services. (Servon)

The finding in the book seem to suggest, that distrust towards banks has not increased, and shows that instead of generating distrust towards banks, consumers instead opt to change banks or go unbanked to avoid coming across the same problem again. (Servon) Consumers in this respect have one key mitigating tool in their arsenal, called choice. (Servon)

## **B. The Era of Post-Truth**

Ever since the beginning of early days of modern journalism, the press was a prestigious institution, which had the most vital role in modern day democracies. The free press's role is to oversee our free democracies and hold those in power to account for their actions. Without the free press, we would not be able to hold politicians accountable for the embezzlement of funds, or for their misuse of power.

As of today, the role of the free press is damaged, and people trust it less. (Edelman) With the advent of the social media, the speed of news accelerated, and it is now not just journalists who can break the news, but the ordinary people too. Let it be a protest against a corrupt government, disaster happening or police abusing their power, news now propagate much faster thanks to these new mass communication solutions.

Unfortunately, it is not just news that people share, but falsified stories that do not have any gram of truth behind them. Since the 2016 US Presidential Elections, we are living the era of the post-truth where information we consume is not pure, but instead it is actively manipulated by third parties that have different political ideologies at play and wish to influence our decision-making abilities, with that making their own choice of political candidates elected and their own discourse continued. This apparent interference with the quality and impartiality of the news seems to have damaged American's view of both the media and that of politics, since many now cannot get access to the information they require to make informed decisions. The information they now receive is now biased.

Donald J. Trump the 45<sup>th</sup> President of the United States now often calls out media outlets who he views as biased as Fake News, these outlets are often then have their operations restricted, their press passes removed and sanctioned, blocking their abilities to do their jobs. But although we must view these from the opposite side, because these news outlets are often biased towards President Donald Trump. The coverage of the Russia Probe has gained more a traction on left-leaning news outlets than those of right-leaning, while liberal news outlets mostly focused on critical views of Donald Trump have often subsided positive developments of the Presidency. Such as protection of autoworker and coal miner jobs, which was more favored by the President during his campaign, but liberals consider these less pressing than the protection of civil rights, minorities, free access to abortions and protection of different sexual orientations.

The news landscape in the United States is now very different than pre-2010, according to the Economist, there is now a greater ideological gap between Americans

regarding their political views, about whether or not media outlets as biased, and what kind of actions they would take against outlets that are biased in their perspective. Left-leaning voters often favor not touching outlets but while Conservative leaning considers sanctioning or closing down outlets that are not impartial in content. (The Economist) Noam Chomsky argues that this is because of the ever-degrading quality of the news provided for Americans while other more controversial media outlets often provide views that Americans do not often have access to. Some of these outlets Chomsky have claimed were for example RT and SputnikNews, while he has distanced himself from outlets like CNN or the BBC. (Chomsky)

Similar events have developed in Hungary when Viktor Orban's childhood friend, Lorinc Meszaros, who was originally a plumber by profession, has begun purchasing media outlets in Hungary. When the State Media was transformed in Hungary, the new official guidance for the company was to be a political propaganda outlet that parroted the Hungarian Government's views and that of the FIDESZ-KDNP party. (SIXX)

In 2016, the Hungarian government used a shady Austrian company called as Vienna Capital Partners, who was the majority owner of Mediaworks, to shut down a left-leaning newspaper called Nepszabadsag, with this essentially beginning the war on the free press in the country. Nepszabadsag was a major newspaper that enjoyed favourable views of the Hungarian middle and lower classes. By having the company eliminated through this trickery, the Hungarian government has essentially cut the news source of hundreds of thousands of Hungarians. Overnight the media landscape of the country was changed, and the discourse has begun tilting towards that of the Hungarian Government's. (Sarkadi)

Hungary although is a different case because the country only had brief periods of time when it had its media free of political interference. Before the change of system in Hungary in 1989, the media was heavily censored by the ruling socialists who were abiding by the ideological standards of the USSR. The news back in those days were basically political propaganda, which attempted to portray the west as an evil to socialism. (Cull, Gatov and Pomerantsev)

This inherent culturally encoded inability of some Hungarians resulted in the careless consumption of news, especially among those who are uneducated and the elderly. The state media M1 TV offers hourly news and reports from Hungary on all kinds of issues, this repetition of information often feeds altered perceptions and views for Hungarians, especially during election times, that over time attempts to alter the perception of viewers of certain political messages and objectives that are important for the government. This

repetition often reinforces the information over time and forms misconceptions in the minds of the viewers who will be more susceptible later to believe that the European Union is impeding on their country's democracy or that there are still migrants coming to Hungary who attempt to steal their jobs and bring crime with themselves. These concepts often create an artificial fear in people, especially the elderly, who will be terrorized by the prospects of migrants<sup>4</sup> invading their home country or their homes. (Halasz and Boros)

The effect of this news alienation has on educated viewers are even more stark. Educated consumers of news are able to filter out fake news and establish a reality check for news that do not conform to their reality. Often these people end up having to expose themselves to more news media outlets, especially on the internet, in order to make a better educated attempt of establishing the truth for themselves by comparing and contrasting headlines and content of information across news sites. This although does not make it easier to establish facts from multiple sources and instead re-confirms bias and makes the consumption of information much harder that further erodes people's trust in the news media. (Langlois)

Through the actual brainwashing of the people, governments can control them through carefully constructed messages that over time makes their views conform to that of the ruling party's (Magyar, Gulyas and Kovacs), just as similarly as how George Orwell's Nineteen Eighty-Four portrays a world where a totalitarian regime has taken over and are now actively manipulating the discourse and instilling fears into the minds of the people to force them to keep believing what they are saying, while all of that information is not true but that of a fabrication. The similarities between Hungary's example and that of Orwell's book is quite striking (Magyar, Gulyas and Kovacs), it is arguable that Hungary's totalitarian control of the news media was directly copied over from that of Russia's example. But so far, the Hungarian example has avoided every type of bodily harm in contrast to that of the model set by Russia. (Magyari)

When teenagers from the Macedonian village of Veles started creating fake news sites, their main goal was to have a stream of income generated by advertising. These sites managed to gain attraction because they propagated partisan false news that conformed to

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<sup>4</sup> We must note here that often these concepts are deeply associated with being a refugee. The conceptualization of the word "refugee" has transformed in Hungary and are now fully associated with other meanings like migrant, muslim, illegal immigrant, rapist and terrorist. The example of events in the town of Ocseny shows that these concepts are now more closely tied together than before. (Halasz and Boros)

the bias of the readers who were not just conservative leaning. Catchy, sensationalist headlines often served as a very good starting point for convincing consumers that the news have some value of truth while it only attempted to fool the readers. (Subramanian)

The sheer amount of fake news people consumed during the US Presidential Elections was staggering, and it has prompted Google and Facebook to actively curate news and ban sites from their search engines and to cut ad revenue for them. (Subramanian)

Troll Farms<sup>5</sup> operated in Russia by the Russian Government also attempted to interfere in the electoral discourse. Their operation on Facebook attempted to create social conflict between both sides of the political spectrum just to intensify differences and enable the spread of false news to be more effective. Voters who saw messages that do not confirm to their political views were more than likely to be later susceptible to other fake news that have targeted their political views with over exaggerated messages with false content. Often this content was very politically biased or contained over exaggerated statements. (Lee)

Our demand for access to unbiased news is constantly eroding our trust in the news media. Whether we are conservative or liberal, the evil cycle of trust erosion in the institutions of the media is never ending. Attacks targeting journalists, as like how Viktor Orban or other members of the FIDESZ-KDNP party attack journalists by labelling them as organizations funded by George Soros or Lajos Simicska<sup>6</sup>, they directly attack their image and portray these news outlets impartiality questionable for others, hinting that the news they are covering is funded by Soros and should not be trusted by anyone. (Beauchamp)

The problem this poses for us is quite immense, because without a properly functioning free press that is able to provide us with unbiased news, we cannot establish the factuality of the information provided and we cannot exercise our rights as citizens to oversee the correct operation of our democracies. Because of this in countries like Russia, people like Russian President Vladimir Putin can freely do whatever he wants without anyone in Russia rising an issue about his executive actions as President of the Federation. If it is even somehow reaching the public, the information can be put to rest by the careful control of the

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<sup>5</sup> Troll Farms (especially in Russia) are state funded institutions that engage in Social Media manipulation by releasing falsified information or running propaganda campaigns in foreign countries.

<sup>6</sup> Lajos Simicska was a teenage friend of Hungarian Prime Minister, Viktor Orban. Due to their friendship deteriorating, they have entered a political feud that prompted Lajos Simicska to buy news outlets and wage a political media war against Viktor Orban. Orban in response has begun personally discrediting and smearing Simicska for cooperating with the billionaire speculator George Soros. (Bayer)

discourse that attempts to silence those who wish to raise a word about the possible corruption ongoing. If journalists in Russia keep attempting to investigate scandals, they can easily find themselves in hot water, have their news outlet bought up by a Russian Oligarch and later shut down, have the authorities make their lives impossible or have Strong-Man's paid to resort to physical harassments, attacks and even murder to silence their opponents. (Denber)

### C. The Great Chasm of Political Polarization

Since the rise of illiberalism and populism across the western world we can see that we have already lost trust in our system. People are rebelling against present forms of politics and choosing candidates and solutions that seem to do more harm than good for them. But, if we look more closer at the problem, we will see these choices are logical and their choices are just as justified as anyone else's when they exercise their civil rights during elections.

According to Andreas M. Antonopoulos, (London Real) the wellbeing of a nation cannot be measured correctly with just one national index where we can claim that an economy is properly functioning and that its positive effects are benefiting the entire country. (London Real) In some countries, for example the United Kingdom or in Greece, there can be majority of people who are feeling discontent with their situation and that seems to counter certain national economic well-being statistics. (London Real) This is worthy of consideration because in this section we are going to look more closely at what has happened in the United States, Britain and in Hungary. We will then see how it reflects to the issues mentioned by Antonopoulos. If we consider that over 50% of Americans voted as a majority for an opposing candidate, can that election victory be then called satisfactory? (Abramson)

As America becomes ever increasingly divided among political ideological lines, it becomes more and more apparent that it can cause problems for members of the public, therefore we must investigate this, because there is too much dependent upon politicians' decisions that can affect our lives. (Pew Research Center)

#### i. *The Legacy of Brexit*

The 2016 Brexit Referendum have shown us that there is a clear disconnection between people and politics, the 51.89% of eligible British Voters have chosen to leave the European Union.

Rural British voters, the elderly and those who receive less support from the British Government, or the European Union were in overwhelmingly in favor of leaving the European Union. People who felt absolutely no effects of the EU's positive impacts saw absolutely no reason to remain member of it. Even business owners who were exporting into the EU had chosen to leave, not considering the possible downsides for their own business interest, but instead have placed their own self and their country's interest beforehand. (Oliver)

The fact that a generation gap began tearing the country apart is apparent because younger voters were overwhelmingly in favor of having the UK remain member of the EU. Younger people often can see the freedom within the European Union because of their interconnectivity and ability to communicate with others cross borders. Their perception of the EU was more in some sense influenced by these freedoms, the freedoms they wanted to keep with their choice to remain. (Shuster)

The Brexit Referendum's result can be attributed to the failure of the UK Government and that of the European Union that they were unable to improve the lives of ordinary British people in any meaningful way. The ever-increasing cost of living put further strain on people and the overwhelmed National Health Service made it difficult to have timely access to healthcare services. (Barr; Yeginsu) A mass influx of foreigners into the country also has accelerated resentment towards the European project. Some have perceived that the EU Parliament is directly interfering in their sovereign country's internal processes by legislating laws that they have not agreed to beforehand, claiming that these laws are made by Bureaucrats in Brussels who they did not elect. In a sense this is a possible reason because the remoteness and quasi isolated feel of the workings of the European Parliament make it not so obvious that although they have actually elected members who the British people have chosen, those people are able to veto or reject legislation passed by the EU Parliament. (Nardelli; Arnott)

Since there is obviously just a marginal support for Brexit as of right now with a total of 3.78% margin, we cannot call the outcome of this vote a decisive decision. Instead what it has done is split communities, alienate family members and cause more than 3 years of bickering over how the United Kingdom will leave the European Union. (Dimbleby and Mooney) Prime Minister Theresa May in June has declared that she is resigning because she has essentially failed to bring about the decision of the British people who voted for Brexit. Multiple of her attempts were rejected by the members of the British parliament. Her Chequers Plan did not pass and caused a longer stalemate that required the extension of Brexit until the end of October 2019. (Stewart)

This has caused many Brexit supporters and conservative voters to criticize her inability, these people now feel betrayed like their 2016 Brexit vote was meaningless. (Jones)

Although the vote was non-binding, the Government could always decide to back out of leaving the EU, but with that they risk further alienating more people from politics and could for ever leave a dent on the public's perception of the British democratic process. As of right now, it seems that the UK is on a path towards a catastrophic no deal Brexit that

will cause mass disruptions across the UK. There is a potential for food shortages, loss of jobs, higher prices for goods and a shortage of medicine. (Oliver) Such problems in a high advanced western democracy are shocking and has never seen and arguably appear like it was a decision of self-harm. (Hutton) The next Prime Minister Boris Johnson have staunchly stood next to his support of a hard line exit out of the European Union which caused further conflict within halls of Parliament. (Mason and Walker)

The legitimacy of the decision was also called into question because of how Vote Leave has breached UK Campaign Finance laws by overspending on their campaign through other unaffiliated leave leaning campaign groups. Their connection to a political consulting firm called Cambridge Analytica was also called into question due to their shady tactics of how they data mined user's data for behavioral analysis of their potential voting choice. Vote Leave also have overexaggerated claims related to the financing of the NHS claiming that they will be able to contribute 350 million pounds a week to it, but later Nigel Farage in an interview have called the claims unfounded and impossible to meet, essentially saying that they have lied to the British people. (McCann and Morgan)

If the United Kingdom manages to crash out without a deal from the European Union, the consequences of that will be far reaching and its damage potentially impossible to repair. The possibility of withdrawing of Article 50 and nullification of the Brexit vote can also come with such an effect. Both choices will alienate people to a great extent, but the greater damaging possibility can solely be found in a No Deal Brexit scenario. There is a great potential for both sides drifting apart further ideologically, creating fringes in both groups. The disillusionment of the unmet promises and the hardships that will follow hides a very dangerous development. Remain voters will not be able to trust the government and will further drift towards the left potentially and reject all forms of cooperation with conservatives in the future. While leave voters would be disappointed with the outcome, they would also not feel comfortable with the shortages and the way Brexit was handled, essentially damaging the Conservative Party further. With this potentially giving space for far right leaning political parties to enter the British Parliament that would even further erode trust in British society and create social conflict across ideologies. We can see that then it would be impossible to reach consensus unless both political parties are eliminated from the parliament and new ones are given the chance to attempt something new.

This is an evil cycle that is unending until the results of the Brexit Referendum are enforced.

ii. *Fallout of the 2016 US Presidential Elections*

The Revelations of the 2016 US Presidential Elections can be also felt globally, the shock election of Donald J. Trump as the 45<sup>th</sup> President of the United States has caused political disillusion across the globe. People who thought that a candidate such as Donald Trump would stand absolutely no chance in winning the race were spectacularly disproven when he defeated the contender Hillary Clinton. Donald Trump has won the election with the race with just over 62 million votes of Americans, it was 46.1% of total votes, while Hillary Clinton has won the popular vote with 48.2%, a 2.1% difference, but because of how the Electoral College works in the United States, more areas have voted for Donald Trump. Often Americans cite an electoral college map of the United States as a proof that Donald Trump's support was more widespread, but less people decided about the vote, it was the minority's choice that he was elected.

Some would argue this is a catastrophe that should have never happen, but this is not problem, because it has shown that there are many Americans who are disconnected from the policies of the previous president Barack Obama. This election basically proven that Barack Obama did little to appease republican leaning voters during his presidency, and in most cases has caused problems for them with the accelerated closure of coal factories. (Achenbach and Clement)

Alienated republicans who lost faith in the system resisted other republicans who were more mainstream and instead elected to have Donald Trump due to his completely clean and inexperienced history. He run on a platform to make America great again for the average Americans who are struggling, championing himself as the President of the People.

This although came at a cost and was not fully accepted by democrat voters. Speculations have begun spreading that President Donald Trump or his campaign staff could have possibly colluded with foreign actors. Accusations of vote rigging have become the norm after the election and months later, after the firing of James Comey the head of the FBI, an investigation was started to investigate the possible obstruction of justice and connection between the Trump Campaign staff members and potential Russian foreign agents. (Yglesias)

News outlets daily were repeating bombshell reports that they claimed have proven that Donald Trump was installed by the Russian government or Vladimir Putin, but so far this has not been proven without a reasonable doubt. (McKay) The outside interference of foreign actors was also possible during the election. Foreign actors from places like

Macedonia were running fake news sites that were relying on advertising revenue collected when people visited these websites. (Subramanian) These sites often contained news that had sensationalist headlines that smeared the democratic contender Hillary Clinton with misleading information that targeted Republican voters. A possibility of a Russian Troll Farm operated by the Russian Government was also scrutinized since their operation on Facebook showed that they were targeting Americans with biased news that attempted to influence their vote's outcome. (Myers and Evstatieva) Facebook cited that over 100 million Americans saw the advertisements on their personal timeline on Facebook and it could have had a detrimental effect on the election's outcome, although Facebook's Founder and CEO Mark Zuckerberg have denied the possibility of such. (Weise)

Also, possible connections were found between members of the Trump Campaign and the British political consultancy firm called Cambridge Analytica. (Wagner) Cambridge Analytica have exploited Facebook by running surveys that had pervasive access to user's data, which was far reaching, allowing them to see into the political leaning of hundreds of millions of Americans, with that essentially having the ability to build a complex political ideology map with which they could have targeted voters much more easily. (Chang) Later the company had whistleblowers claiming that they are doing very pervasive policy influencing abroad. An Australian news channel went undercover posing as an African Country's representative that wanted to influence its voter's thinking and alter the results of an election. (Prokop) The company was closed down and the investigation into it is still ongoing by the Metropolitan Police in the United Kingdom. (The Guardian)

We can clearly see how such a controversy can affect people in the United States. According to *Pew Research Center*, in 2014 we have reached the largest gap of political ideology between the Liberals and Conservatives among politically engaged, before 2008, this gap was non-existent, and policy often overlap with the interest of both Conservatives and Liberals. Today, this gap has seemingly increased, and polarization is much more apparent. (Pew Research Center; Edelman)

The progressive policies of Barack Obama have failed to improve the lives of rural Americans while it did improve the state of civil rights and liberties they were enjoying, especially in relation to LGBTQ+ rights<sup>7</sup>. Americans are still largely divided on critical policies such as Gun Rights, Environmental Protection and Abortions. (Bialik)

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<sup>7</sup> During the Obama Administration, a landmark ruling was passed by the US Supreme Court that allowed Americans to marry others of the same sex in all 50 continental US States. (Chappell)

The divide between Americans across the two spectrums seem to be just growing unending, reaching common ground between Democrats and Republican so far seems to be very difficult and often cause stalemates in the halls of Congress. (Caldwell)

This kind of disillusion with the system and government is slowly turning Americans towards more radical ideologies, such as the Alt-Right, and the Anti-Fascist movements that seem to polarize America today. Both sides seem extremely intolerant and unable to agree on anything. (Saphiro)

Ever since 2010 there has been a dramatic rise in numbers of Libertarian Voters, as social policy ever increasingly started to go towards liberalization of rights and freedoms for individuals. Their solutions seem ever increasingly more reachable and their views more favorable than the currently mainstream parties in Congress. Other than the American Green Party, the Libertarian agenda seems to be able to provide actual solutions for problems that Americans face today. Ranging from streamlining the complex bureaucracy and limiting the reach of government while giving back the freedoms to all Americans that the Founding Fathers meant to give to them with the given protections grounded in the Bill of Rights and in the 1<sup>st</sup> and 2<sup>nd</sup> Amendments. (Rosenberg)

Democrats on the other end do not feel content with the policies enacted by the Trump Administration. They perceive their approach to policy as conducive towards their freedoms. Especially towards Abortions, with the installment of the new Supreme Court Judge Brett Kavanaugh who could change the tide on a possible re-examination of the 1973 Roe vs Wade decision that granted the option for woman for abortions. The overturning of this decision could mean a much more restricted access for woman to seek reproductive healthcare and access to abortions in the United States. Most democrats do not want such a thing to happen and vehemently oppose such changes that impede on the rights of woman.

Barack Obama multiple times attempted to introduce legislation to control the sales of weapons in the US to little success. The Second Amendment of the United States clearly states that the rights of American Citizens should not be infringed upon and access to weaponry should be a right granted by Citizenship. Since as it is declared in the Second Amendment, the presence of a well-trained irregular militia is required to protect the freedoms of Americans even if that comes at great price. Most democrats on the other hand would gladly restrict the sales of guns and introduce in legislation requiring mandatory background checks and registration of gun ownership. This is entirely unacceptable for most Republican and Libertarian voters and also seem to be splitting some democrat leaning voters. (McCammond)

Democratic presidential candidate Beto O'Rourke has suggested that he would go as far as using lethal force to take away AR-15s and AK-47s from law abiding Americans. On Twitter, his message has been immediately denounced as an actual threat to kill people who refuses to surrender their weapons. (Stockler) A US State Representative Briscoe Cain tweeted a play of words where he has said that his weapon is ready for O'Rourke which was immediately perceived by O'Rourke as a direct threat against his life. (CNN Politics) Although, gun control is not solely a subject targeted by democrats, often republicans also alter laws that introduce in new regulations that make it more difficult to access weapons, for example the banning of bump stocks were signed into law by President Donald Trump himself which was initiated by him after a mass shooting at a concert in Las Vegas.

Gun Hobbyists supporters of the Second Amendment were quick to also denounce Beto's threats and called for the increased use of 3D Printed weapons to prevent the Federal Government or the Police from confiscating weapons. Gun hobbyists argue that new 3D printed weapons can counter the government overreach of power and protect them from illegal interferences targeting their Second Amendment rights. (Li and Lifthrasir, 2: Behind Enemy Lines – A.G. Leaks; Li and Lifthrasir, 5: Come and Print It – Ivan The Troll)

It appears to be that the spread of 3D printed weapons is a direct effect of politicians impediment upon the Second Amendment rights of US Citizens. (Li and Lifthrasir, 5: Come and Print It – Ivan The Troll) The spread of 3D Printing technology and its easy access have prompted some to invent new forms of weapons and improve upon older types, with extremely overwhelming results. Ranging from the original plastic Liberator to 3D Printed Glock lower-receivers (Biggs), partially plastic submachine guns like the FGC9 (FuggGunControl, Fuck Gun Control 9 Carbine; Deterrence Dispensed), the Plastikov type AK-47 receiver (FuggGunControl, Plastikov 3D Printed AK Receiver) and sci-fi-like shotguns with rotating loading mechanisms that function similarly to Revolvers called as the Liberator12k ZZ6-12. (BigTanGringo)

The spread of 3D printed weapons seems right now inevitable that seek to restore individual freedom and one's ability to protect themselves and their property. These are easily accessible files that can be downloaded from the internet from censorship resistant applications like Keybase, which is a PGP key storage service with encrypted chat functionalities is built in. Services like Keybase make it extremely difficult for governments to censor these activities of private citizens who seek weapon schematics and files to print weapons in the privacy of their home. (Li and Lifthrasir, 7: BitcoinGun Lawyer Part I; Li and Lifthrasir, 2: Behind Enemy Lines – A.G. Leaks)

At this point we must ask the question, how long is it possible to play a cat and mouse game where political parties replace one another repeatedly, where they impede upon the rights of others, and seek to restrict our freedom? How long is it possible to continue this cycle without having political parties losing their legitimacy completely?

We cannot eliminate the possibility that this problem can cause a cyclical loss of trust and increase of distrust. Which in fact would make it harder to make proper decisions. People will become reluctant if their options are limited. Therefore, chances that, they will even avoid taking part in the voting process all together by abstaining on all candidates.

### *iii. Hungary's Illiberalism*

Ever since the 2010 Hungarian Parliamentary Elections, Prime Minister Viktor Orban lead FIDESZ-KDNP coalition has uninterruptedly served as Hungary's Government. When millions of Hungarians voted for the coalition party, they were mostly driven by resentment and distrust towards the Hungarian Socialist Party MSZP and were also desperate for a change after the 2008 Global Financial Crisis as Hungary's total national debt kept growing.

At this time, the FIDESZ party, in coalition with the Christian Democratic People's Party, was more centrist in political orientation and appealed to many young voters and old alike. Only after the beginning of the European Migration Crisis could we clearly see the direct effects of how the governing party was slowly transitioning towards the far right. Voters who were staunch supporters of the government suddenly found themselves alienated from their party because of their new, more nationalist agenda that did not suit their ideology.

During the Migration Crisis, the Government of Hungary resorted to mass media campaigns and advertisements targeting Hungarians with messages drumming up fears of incoming Migrants who were on their way to Hungary. Displaying large white texts on blue background saying: "If you come to Hungary, you cannot take the Hungarian's jobs!" or "If you come to Hungary, you must respect our Culture."

The question was quickly raised why these messages were in Hungarian. For it clearly did not target mostly Arabic speaking migrants arriving into Hungary. These messages were the beginning of a targeted and systematic advertisement campaign that attempted to drive the public discourse and instill fear into the minds of the Hungarian people.

Years later, these campaigns kept going on and broadening their assault with the establishment of the State Media outlet as the loudspeaker of the government that parroted its political ideology to viewers. George Soros, the billionaire speculator was also chosen as

a scapegoat to blame him for the influx of migrants, as the person of interest who wants to dilute Europe with the hordes of Muslims. A similar demagoguery can be found in Turkey also with connection to Fethullah Gulen who is a Turkish Islamic Scholar currently in exile in the United States, he is also used similarly as a scapegoat by Turkish President Recep Tayyip Erdogan.

The closure of Nepszabadsag has also eroded press freedom in Hungary and limited down opposition voices so much in Hungary that the US Department of Foreign Affairs introduced a grant for any company in Hungary that was willing to create a news outlet that ran independent news outlets not connected with the Government or its views.

Since most of the Hungarian news outlets are now owned by Hungarian oligarchs it is very difficult for independent outlets to properly operate. The recent acquisition of HirTV by Lorinc Meszaros affiliated news channel Echo TV further limited people's options to consume unbiased news.

The oligarchy system which Viktor Orban has built out in Hungary clearly shows that they are actively attempting to manage the discourse of Hungarians with actively managed propaganda and coordinated news releases through outlets owned by allies of the governing party. Friends of Viktor Orban own many hotels, bars, nightclubs and other businesses around tourist destinations and around Lake Balaton that keep generating them immense profits.

The misuse of EU funding is also a huge issue, the recent ELIOS Scandal in Hungary shed light onto how family members of Viktor Orban was able to embezzle EU funds while providing inferior public lighting option for cities. The EU watchdog for fund embezzlement OLAF has already made its recommendation for legal pursuit against the possible fraud committed by them, but nobody so far has been fined or imprisoned for their illegal activities.

Hungary's fixation on improving the national sports facilities, like Stadiums, has also drawn the ire of Hungarians because of how much the Hungarian Health Service is neglected. Hospitals cannot afford soap in restrooms, neither the ability to maintain proper hygiene in them, which resulted in the rise of dangerous anti-biotic resistant MRSA cases. These rising MRSA cases are often denied outright by the government in order to prevent a potential panic from occurring within hospitals. Doctors in Hungary don't receive proper wages and many of them leave Hungary to work abroad for a much higher wage. (Lenard)

The Education system in Hungary is also crumbling, teachers are not provided the necessary wages and schools and kindergartens are severely underfunded. This underfunding although made some places in Hungary offer almost German or Dutch minimal wage level

offerings for certain kindergarten teachers, desperations often leads them to offer even those applicants who lack training just to immediately fill these vacant positions.

The neglect that the Hungarian government shows towards these areas are astonishing and is actively upsetting Hungarians.

The recent 2018 Hungarian Parliamentary Election shows that Hungary's opposition was successfully fragmented by the governing party. The way Hungary's electorate is set up made it impossible for smaller parties to gain seats in the Parliament and their fragmentation made it possible for a minority choice to take seats. Although the opposition has a higher number of supporters combined, their inability shows that they are unable to cooperate, even on the removal of the currently ruling government.

More people have voted for the opposition parties than for the currently ruling FIDESZ-KDNP party, but they still have managed to achieve more than two third majority in Parliament because of how the Hungarian Election System is designed.

This shows us that Viktor Orban's plan to fragment the opposition has so far been successful. His targeted attacks alienated voters from smaller parties while labelling their leaders as agents of George Soros or supporters of illegal migration.

Hungary is in essence polarized, but the recent 2019 European Parliamentary Election seems to hint that there are now new parties emerging that could have a fighting chance at replacing the currently ruling government.

Hungarians have a really hard time trusting political parties, since right now the last two governments that were serving both were corrupt and this does not increase the confidence of the public easily in other political parties. As the Hungarian public's trust is now ever increasingly looking fragmented, a possible consensus seems difficult to achieve. Smaller parties like the Momentum Party will have a very difficult time convincing voters that their political agenda can be trusted. Essentially this shows that the Government's goal has succeeded and managed to permanently divide Hungary into small fragmented politically incompatible ideologies that cannot agree with each other in any way. Exceptions do apply in the case of the new Mayor of Hodmezovasarhely, Peter Marky-Zay, where the opposition was able to work together before the parliamentary elections. However, it did not translate into a global movement for the parties to unite together during the general election.

Research done by the Hungarian Scientific Academy seems to show that members of the ruling government began using Newspeak. (Magyar, Gulyas and Kovacs) The use of Newspeak by members of the Hungarian Government shows very high possibility for preparatory attempts for a potential change of support towards the European Union after the

EU funding for projects in Hungary cease to happen. This could potentially mean that words used by members of the government could correlate with targeted ideological influencing attempts that try to prepare Hungarians for a potential exit from the European Union if it does not serve the interest of Viktor Orban or the FIDESZ-KDNP government. (Magyar, Gulyas and Kovacs)

If Hungarians fail to act in the upcoming years, it is apparent that there will be challenging times ahead that could be detrimental for their economic and political wellbeing for the foreseeable future.

As we have finished up this section, we now can see that there are complex issues present within society, ranging from the unbanking of individuals to the political polarization we experience today. These are just the symptoms of a disease that took hold over us for just over 100 years. Now, in the next chapter we will get to understand the virus that causes this severe disease, which in return, creates these problems we that we just discussed.

### **D. Monetary Nationalism**

Ever since the start of the 20<sup>th</sup> century, some researchers have been arguing that there is a currently ongoing slowdown of technological development. (Huebner; Adler) Since the end of the 19<sup>th</sup> century, speed at what technological innovation was evolving began to decline dramatically. (Huebner) According to Jonathan Huebner, new innovations right now only focus on improving already existing technologies and do not seek to introduce in new ones. (Huebner)

This declining trend seems to show that there is a global decline towards true innovation and a move towards profit maximalization have occurred. (Huebner) The world as of today faces a global anti-biotics crisis with the spread of anti-biotics resistant bacteria. (U.S. Food and Drug Administration) Large pharmaceutical companies now only focus on other medicines that give them a constant stream of income. Medications that many people take are often prescribed on a regular basis for longer periods of time, this way generating income for pharmaceutical companies. (Pollack) But on the contrary, their problem with anti-biotics is that these medications are only used once for a limited time and does not provide a profitable venture for them. Thus, research and development towards these important medications are exceptionally low and we see very few new anti-biotics that can fight resistant bacteria that evolved and mutated throughout the decades. (European Center for Disease Prevention and Control)

The declining innovation trend seems to point at the fact that humans right now prefer instant gratification and profit seeking to drive innovation. It is no longer in the pursuit of new technologies or things that make life better, but instead just new improved inventions of older technologies. (Huebner) The microchip manufacturing also relies on these factors. The two competing microchip makers, Intel and AMD, are in essence creating improved technologies that improve upon their already existing architectures, this is purely is based on the demand of the computer industry. Long gone the times when new, innovative technologies were created for non-existent markets that do not utilize such technologies. (Huebner)

If Huebner's research and modelling is correct, something has happened during and after the turn of the century, which we must look more closely at to better understand the potential innovation halt that the future holds for us. (Huebner; Adler)

Huebner's findings can also be correlated to another surprising factor, starting from the early 90s, namely the declining rates of births in developed nations, especially in Japan, Hungary and other European countries. (Kyodo)

The economical standards and theories of John Maynard Keynes seem to be one of the key players in this problem for us. (Ammous) As argued by the followers of the Austrian School of Economics, and its notable followers like Ludwig von Mises, Friedrich A. Hayek, Murray Rothbard, the effects of Monetary Nationalism can be solely blamed. (Ammous)

The effect that can be mostly linked to our problem is the debasement of currency, as part of monetary nationalism<sup>8</sup>. (Ammous) This is not a new phenomenon. Throughout the millennia there were multiple cases of such debasements (E.g.: The debasement of the Roman Denarius), that resulted in the destabilization of civilized society. (Ammous)

As it has become necessary for society to transact with currency throughout history, new forms of money appeared that people used to transact or keep records of their property. From the early Yap stones to beads, people encountered multiple challenges by others who wanted to gain financial superiority over one another to expand their own interests across lands and civilization. Yap Lands saw a sudden change in their society thanks to the newly mined Yap Stones that quickly devalued their stone currency, and African societies fell under the dominance of Europeans who had easy access to the creation of glass beads with which they purchased land and property from them. (Ammous; Szabo, Shelling Out -- The Origins of Money)

Similarly, the Roman Empire also attempted to exert control of their empire through the debasement of the Denarius. It saw its value crash over three consecutive leadership changes that had different monetary policies which favored the minting of more coins through the decreasing of silver present in the coins and introduction of other metals to dilute it. (Ammous) While there were scarcity in terms of coins and had a high silver content, it had relatively high value. At that time prosperity was observed in the Roman Empire. But when the currency was debased and it lost its value, the collapse was inevitable and those who were enjoying a lifestyle in the cities were no longer able to sustain themselves. (Ammous)

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<sup>8</sup> Monetary Policy, referred here as Monetary Nationalism, is a sovereign State's ability to issue its money and control its monetary policy, money supply and its functions as a sovereign Nation. Either through a ruler like a king, emperor, dictator, or through an independent national central bank. (Ammous; Steil)

Later with the spread of gold coins, empires and trade have flourished. (Ammous) Doing trade with gold coins were easy because the coins usually had different amount of gold present in them and that served as the basis of an exchange rate for traders. (Ammous) In China though, with the introduction of paper money, this was not so easy because at those times western traders were unable to exchange Chinese paper money back at home to gold because nobody was using them, and these paper notes had no value back in Europe. (Ammous) The over printing of paper fiat currency has already been noted by researchers and its consequences are well documented. (Glahn) As other countries started pursuing the printing of paper money, which at that time were backed by gold, the exchange of foreign currency was similarly easy. (Ammous)

During World War I, the Christmas Truce of 1914 showed that wars, with the debasement of currency and without politically charged ideology, appear to make no sense for soldiers. It has miraculously resulted in a truce where soldiers from both warring sides came together to celebrate Christmas for a few days. (Ammous) This has shown that the only fuel behind this war was funding of it by opposing sides. After the First World War, the Austro-Hungarian Empire's gold backed currency has collapsed due to the limitless printing of money that was required to fund the war. This resulted in the total loss of value of the currency used by the Austro-Hungarian Empire. (Ammous) The Weimar Republic after the war has also resorted to the debasement of the Mark, its currency, in order to repay the mounting reparation debt, it had to pay for allied nations as a punishment. Since the Mark was no longer covered by a gold standard, a hyperinflationary effect has resulted due to the mass printing of fiat currency. Later, with the crash of the Dow Jones Industrial Average the great depression has created further dissent which directly allowed the rise of Adolf Hitler into power. (Ammous) Those who were seeking a way out of the hyperinflationary crisis and the great depression have resorted to nationalistic views quickly and this made it possible to make the views of Adolf Hitler more accessible to the masses by putting blame onto others for the problems that were experienced by Germans during these crises. (Ammous)

Similar effects can be observed in today's modern times, in relation to the Greek Debt Crisis which resulted in far-right elements becoming mainstream like the Golden Dawn movement that seeks to solve the problem through a more nationalist political agenda. (Strickland)

When Franklin D. Roosevelt signed Executive Order 6102, he directly attempted to impede upon the monetary wealth of Americans by attempting to control the flow of money and giving access for the US for more gold to hold on reserves. (Ammous) Gold was

confiscated from private individuals through the use of force. That year June, the United States has went off the Gold Standard and the US Dollar was no longer backed by Gold. (Ammous) Other countries like Hungary has also followed suit and has left the Gold Standard due to the hyperinflation of the Hungarian Pengo, which was the largest ever hyperinflation that happened in human history. (Bomberger and Makinen) In 1944, the United States used the Breton Woods Conference after World War II to bring about a control of gold reserves around the world, by creating a gold reserve agreement that allowed signatory countries to exchange the US dollar notes they held in reserves into actual gold. (Ammous) In 1971, President Nixon noted that he could exert more power into the hands of the US if he removed the gold exchange program completely. On the 15<sup>th</sup> of August 1971, President Nixon, has officially ended the exchange program and forced countries to use the US dollar instead as a reserve currency without the ability to exchange them to gold. In 1976, the dollar's description was officially changed and the words claiming it to being backed by gold were removed and were turned into notes of the US Federal Reserve Bank, creating a pure fiat currency out of the US Dollar. (Ammous)

Examining the effects that the debasement of the US dollar has created, we can observe that from 1921, till today 2019, the US dollar has lost more than 90% of its given face value, essentially losing most of its value that it had in the past. The sharp contrast between how much 1 dollar was able to get for one person back in 1921, and its value today, makes the loss of value of the dollar very apparent. (Prentice and Clown) When a currency loses 90% of its total value over a period of almost 100 years, we can clearly see that it could pose potential harm to its users, and also to those who actively hold dollars in reserves. (Ammous)

The global abandonment of the gold standard also led to the proliferation of national currency exchange rates that fluctuate every day based on the traded and speculated value of a currency. This makes it much harder for businesses to do trade abroad where the exchange of currency often serves as a barrier of trade and commerce. (Ammous)

When such systematic debasement of currency happens, we must ask the question whether this is intentional. Most users of national currencies do not seem to understand what is the basis of money that they hold and mostly rely on their own interpretation of what is the value of the money that they use. Also, in academic circles it is difficult to find people who understand how fiat currencies function, because of the well spread ideologies of Keynesian Economics. (Ammous) Keynes's focus on aggregate spending and avoidance of savings seem to have caused a long-term effect on society, which made it possible that

individuals can no longer clearly understand the meaning of money that governments today print out in abundance at little to no added cost. (Ammous)

John Maynard Keynes multiple times stated that savings are dangerous (Ammous) and often cause economic instabilities, and that increasing spending creates future prosperity. (Ammous) To some it might seem like normality, since universities around the world religiously teach these views as part of the curriculum (Ammous) and rely on them as the basis of economics. (Ammous) But if we take a closer look, we can find evidence that Keynes had very little economics knowledge and experience before he began spreading his views on economics (Ammous). Saifedean Ammous states that, Keynes had inadequate understanding of how market economies work. (Ammous)

If we look at the claims present in the book by Saifedean Ammous, *The Bitcoin Standard*, we can see that there are obvious correlations between the behavior of John Maynard Keynes and his spending habits. (Ammous) For example, it is due to his way of acquiring wealth by the means of inheritance that he has begun spending. For a person so short sighted like Keynes (Ammous) it might look that he is creating a prosperous future for himself by spending his wealth right now, but it is on the contrary. His view that current spending accelerates market development seemed to have a rather negative effect on himself. It has gone beyond that because it has effectively created a spending drive that requires central banks to continue spending and creating money to keep the GDP high and climbing, while indebting themselves relentlessly. (Ammous)

Keynes's example clearly shows a generational divide as it is described by Francis Fukuyama. Since Keynes was not the person who earned his own wealth, he felt entitled to spend it, not understanding that there were others before him in the family who had to work hard to make that wealth happen and remain stable down for multiple generations. Just as Chinese families today struggle with this problem, generations later when family members lose interest in their parent's businesses and begin searching for alternative opportunities. (Fukuyama)

Keynes on multiple occasions cited the book which he essentially popularized in mainstream economics, written by John M. Robertson, titled *Fallacy of Savings*. Robertson clearly claimed that total savings in population would lead to declining trends of demand and output and much lower savings. But this is illogical in market economies because the lack of savings and increased debt based aggregate spending seem to lead to economic bubbles that rob wealth away from the individuals. (Ammous; Prentice and Clown)

The effect of Keynesian economics and Monetary Nationalism is a very deep issue. (Ammous; Davidson and Rees-Mogg; Hayek, *The Road to Serfdom*; Rothbard) The first effect we can see from the debasement of currency is that fiat money loses value over time and makes savings impossible due to inflation created by central banks that effectively steal value away and hand it over to the government or to the first spender of the currency. When gold is mined out, it is not the person speculating on the value of gold who gains value, but the entity that mines out the gold and sells it first hand to a buyer. Afterwards the buyer won't be able to sell it again for the same price but much less, effectively making gold work like a pyramid scheme. The more we are selling from the asset in a given market the less value it will hold for others after our sale fulfilled. Similar effect plays off when Central Banks print out fiat money, with little added cost. (Ammous)

This type of devaluation of currency makes it difficult for people to hold and save money over time because it enforces a mental requirement to spend the fiat money in order to gain instant gratification. (Ammous) If an individual for example in the United States decided to save money from 1930 until 2015, the value of the savings would have decreased if no additional amount was added to the savings. This proves that fiat currencies are terrible store of value. (Prentice and Clown; Ammous) The aggregated spending theory also enforces spending, similarly, by making governments borrow money from central banks and spending that money. Funding public services, education, healthcare, infrastructure projects and militaries. Governments literally print out free money and hand it out as if it has any form of value, while enforcing that currency's purchasing power using military might and violence. (Ammous)

Essentially, the fiat currencies governments print out today are not backed by anything. Individuals are often ignorant about such facts and claim that paper money is backed by monetary metals which is not true but instead just Central Banks hold monetary metals as reserves and that paper money essentially wields no value due to that. (Ammous) Value is only later added when value producing humans attribute the fiat currency with value through their own work. This association process is enforced by government's action because a government uses its military might and violence to enforce the usage of a currency, and because of that when humans work for wages, they associated the created value with the paper notes, attributing value to the piece of paper that is not backed by anything but its usage enforced by the state through violence. This is what gives paper money value, and that is what governments impede upon by printing more to dilute the monetary base. The value someone produces today by working is essentially robbed away through theft committed by

central banks and governments throughout the manipulation of the monetary supply. (Ammous)

This type of theft through inflation allowed the Astro-Hungarian and the German Empire to wage limitless war during World War I. Before the debasement of currency was an actively practiced solution for Kings and later for Governments, Kings had set out taxes to fund wars or other projects and the main solution was not often that they would just debase their currency to gain more money. Other governments also resorted to the use of inflation to finance their war efforts during World War I and World War II and beyond. The debasement of currency became the de-facto standard of war where printed out money served as the fuel of senseless wars waged by political opponents and authoritative imperialists. (Ammous)

*i. The Disruption of the Global Time Preference*

As the debasement of currency has begun, a complex sociological change has gone down within society. This effect was the permanent change in time preference<sup>9</sup>, independent of the cultural code. (Ammous) Due to the fact that money today, for a large majority of humans on Earth is an indispensable part of daily life. Only few isolated ethnic communities exist today that do not rely on money and still barter daily. (Ammous)

When time preference rises, the need for immediate gratification increases. This effect comes hand in hand with fiat currencies inflationary property, which in fact created by central banking monetary policy. (Ammous)

When there is a lack of savings within a population (World Bank), we can see that there are declining rates of marriages and births. (Kyodo) The lack of savings makes it difficult to foresee the future and commit one's self towards a marriage and if the situation is not acceptable neither will it be possible for someone to raise a child. (Ammous) This today seems to become a standard behavior within society among those who cannot sustain themselves properly and will not take risks in life like going into a marriage or having a child.

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<sup>9</sup> Time preference is a behavior trait that determines how we will decide about actions where we might demand instant gratification for our needs. A high time preference trait makes us want to fulfill our needs immediately, while a low time preference makes us defer these actions later into the future. Individuals with low time preference tend to save more money and defer from spending it immediately while those with high will reach for lines of credit, overspending without any possibility of savings. (Rothbard)

(Ammous) Of course, this can be different based on a person's actual financial situation, because high time preference effects might not be so visible with individuals who live well above the average. If someone can afford to sustain themselves, then there are higher chances that the available wealth will allow that individual to form a family and raise a child. If there is a sound basis for prosperity that one has created for themselves, then these will not be often visible in this sense. While others who do not have access to banking systems and live well under the average, will often resort to loans and overspending. (Ammous)

When individuals resort to loans, they are not spending their money but rather spending money from their own future self to fulfill an immediate demand for a service or product that require immediate expenditure. (Ammous) When individuals attempted to overspend before the 2008 Financial Crisis, they quickly found that upon the effects of the crisis their personal finances were easily compromised by a change in work status, a demotion, or a loss of employment. (Anon1; Servon; Ammous)

Banks have quickly reacted to this situation by downgrading credit status, restructuring debts, and re-classifying them as defaulted because of change in the individuals' financial circumstance. This alone has led Erste Bank Zrt. to cancel the loans of thousands of people in Hungary, by that jeopardizing their economic and emotional/mental wellbeing. The effect although is more shocking if we manage to understand why it has happened in the first place, since it could have been avoidable on the side of the bank, but they still have decided to go with another solution, which resulted in the default of thousands of debtors. (Anon1)

Banks as of today do not consider human beings based on their personal situation, especially in the United States, but instead solely rely on numbers calculated by computers. These algorithms then decide whether an individual is eligible for a loan or other type of financial instrument. (Servon)

This fact does not directly mean that Banks are evil, or that the bank teller we meet sometimes is trying to exploit our financial situation. (Servon) Rather, the operation of a bank, as a company, was changed on the basis of human time preference enforced by those who invest into the financial institution. (Ammous) If we are investing into stocks, for example, we do so because we expect the stocks to gain value over time based on the performance of the company. Shareholders then expect banks to release quarterly, monthly, or even yearly reports of their financial situation and development. If we are holding stocks that allow us to exercise a vote, and one that even pays us dividends, then we are inclined

towards enforcing a for-profit attitude onto the company. This can be done by changing the executive officer of a company through voting, for example.

When a company's wellbeing is measured just in numbers and economic output, there tends to be a trend of profit maximization. (Ammous; Servon) After the banking regulations in the United States were changed, Investment and Residential Banking institution were able to merge. (Servon) It has caused the lowering of total interest rates on deposits and the start of riskier banking behavior that directly resulted in the 2008 Global Financial Crisis. (Servon)

The fact that profits are so important for these institutions is inherent, because of capitalism, which is not necessarily negative effect. However, it can turn into a problem when there is an exploitative attitude exercised by institutions to increase their profit margins at the direct expense of its clients. (Servon)

Individuals who hold shares and wish to gain profits have directly led to the increase in time preference of such institutions. And it is not isolated to banking, this also apparent in the Insurance sphere where obscured contracts are sometimes used to make it impossible to fulfill claims, based on the wording of the contract that was signed between the institution and the client. (Servon)

This type of time preference change is the main factor why there is lack of accessible lifesaving medications which are often outrageously priced, (Pollack) often citing research and development costs that companies must seek to even out with the sale of the medications. (Pollack) When immediate profits cannot be fulfilled, their research and development will not receive sufficient funding for its realization. Instead, other medications will be prioritized that give a company a steady stream of income, just as it was explained previously in main section of this chapter. Often such research now requires the involvement of governments and research universities because there is a lack of willingness from Pharmaceutical companies to participate actively in their research. (CDC)

Comparable situation can be observed with the development of electronic vehicles. Up until Tesla Motors has created a viable demand for electronic vehicles, auto manufacturers kept putting their focus onto fossil fuel based vehicles, and just a couple years now that some companies, like General Motors, declared that they would be going fully electric by 2023. (Davies) The lack of demand for electric vehicles kept driving the profit maximization of the fossil fuel based vehicles. It is well notable that Tesla was running deeply in negative operational costs before it began selling its latest models. This also

indicates a much more lower time preference on the side of Tesla Motors than the other companies which did not wish to participate fully in such research or development. (O'Kane)

Research and development right now are not focusing on long term sustainability and modern inventions, but rather the exploitation of a given market segment that drives sales of certain products. In turn, drives up profits and increases the price of shares due to increased profits generated by the company. (Ammous)

When we examine the funding of healthcare and education in Hungary, we can see certain similarities that are present in Keynesian economics, namely, the sole reliance on numbers. (Ammous) Governments today are not considering inner factors in their decisions but rather base their decisions on statistics that lack meaningful feedback of a given economics or social situation, eliminating the option of considering all factors that could improve a given problem. (Ammous) Therefore, healthcare and education in Hungary don't receive adequate funding. The Hungarian Government rather focuses on different ventures that appear more lucrative for itself. (Goldblatt and Nolan)

Members of governments do not go to these places to individually examine their circumstances and to make individual case by case decisions based on their given situation. (Ammous)

It is clearly apparent that Keynesian Economics and Monetary Nationalism have directly led to the global increase in time preference within society (Ammous), that ultimately began to damage it with a long lasting effect that is impossible to repair. (Ammous; Steil)

High time preference has resulted in the debasement of currency and the ending of the gold standard (Ammous), which have also accelerated the increase of time preference and made it more appealing for companies and institutions to abuse the individual's trust for their own financial gains. (Ammous)

This effect of monetary nationalism seems to indicate that the abuse of human trust is not a direct goal of the system. (Ammous) Although, some might argue that this is the abuse of trust, which is in turn not completely false. (Ammous) The problem we are facing is a self-reinforcing situation where the lack of choice alters behavior and changes the time preference of humans. (Servon) Those controlling companies have also have their time preference changed and according to that the operation of a company is executed based on the expectation of high time preference shareholders. (Ammous) In the end, it results in a situation where the system seeks to exert a totalitarian control over the spending behavior of

society, which in turn creates political destabilization and the destruction of human produced value throughout inflation. (Ammous)

When we put our blind trust into institutions and later when we perceive it as breached, it goes against common sense expectations that we think is logical and reasonable. Then that trust of ours is breached and it becomes a necessity for us to seek for an alternative that can solve our problem. (Servon; Fukuyama) Therefore, we do not support political parties that lied to us during elections. We change banks when we are overcharged regularly for something that we do not expect. Thousands of Hungarians opt to migrate abroad to another EU countries to seek better employment and higher living standards. A minimum wage employment in Hungary certainly do not allow an individual to afford savings and will certainly resort to loans when a need arises. (Anon1)

But since here we have concluded that the main cause of rising distrust can be attributed in part to Keynesian Economics and Monetary Nationalism, can the problem be solved? Can we change the time preference of society and with that make it possible for people to be able to save money over time from their earnings? Can we stop Central Banks from stealing from us using inflation? (Ammous) Can we find an alternative (Nakamoto, Bitcoin: A Peer-to-Peer Electronic Cash System) that frees us from the influence and control third parties, like, governments, banks, and central banks? (Ammous)

As of right now, if we would ask this question from experts and academics, they would fail to provide us with a sensible solution that reverses the effects of Monetary Nationalism. (Ammous) The legacy system that we live in right now, does not has a solution for the almost permanent effects of high time preference. (Servon) This damaging effect have put our planet and society into direct danger and led to the over consumption of goods, excessive production of unnecessary products that further Climate Change and the lack of interest in the research and development of necessary inventions (like new antibiotics) that could counter dangers the future might hold. (Ammous) But while governments control us and enslave us throughout the use of inflation, it is impossible to do anything, and it is certain that we will be rolling down the steep cliff towards the abyss. (Ammous)

While it seems nihilistic (Cheong), the fact is that there is a viable, sound solution (Nakamoto, Bitcoin: A Peer-to-Peer Electronic Cash System), (that is denied and ignored by many). (De; Ossinger) A solution was already made and created to solve our problems, just about 10 years ago in response to the 2008 Global Financial Crisis. (Nakamoto, Bitcoin: A Peer-to-Peer Electronic Cash System) It is a solution that many great thinkers like F. A.

Hayek, James Dale Davidson and others have predicted, just over ten years before its actual inception. (Davidson and Rees-Mogg)

In the following chapters, we are going to explore this alternative financial system (Nakamoto, Bitcoin: A Peer-to-Peer Electronic Cash System) and see how it is able to fix our broken system (Pritzker), how it can free us, accelerate growth and global prosperity, and limit down the reach of governments that seek to control and enslave us. (Ajiboye, Buenaventura and Gladstein; Davidson and Rees-Mogg)

## II. Bitcoin

Since the advent of the Internet, privacy has become a main frontline of development among members of the cypherpunk<sup>10</sup> community. As the first formations of cypherpunk movements became apparent, the goal to make communication in the cyberspace censorship resistant has become a primary goal. (Hughes)

Liberational technologies also come to the forefront as end users also gained access to forms of encryptions that allowed communication and data to be hidden from prying eyes. As these technologies has begun to spread, thanks to the internet, everyone was able to encrypt their communication and hide from oppressive governments and from mass surveillance. (Hughes)

The establishment of a cyber currency been in the forefront of this ideology where an independent cyber cash could serve society independent that of centralized government control. (Davidson and Rees-Mogg) Up until 2008, there has been no viable solution created that was able to properly decentralize and make censorship resistant a monetary system that was necessary for liberalization of the individual. (Nakamoto, Bitcoin: A Peer-to-Peer Electronic Cash System; Davidson and Rees-Mogg) As the internet began to spread across the globe, just within 28 years, in its current form, it has turned into a vital part of our everyday life. As the internet slowly began decentralizing control and governance, it has also begun to speed up the spread of technology globally, new revolutionary technology now able to bring about changes much faster than ever before. (Fukuyama; Davidson and Rees-Mogg) Since the centralized control and issuance of currencies are the main problem that allow the repeated breaches of trust, cyber cash type of currency was proposed to solve it, by creating the separation between state and currency. (Hughes; Nakamoto, Bitcoin: A Peer-to-Peer Electronic Cash System)

Very few could imagine anything like an independent monetary tool that could function without the control of a government due to the nature of fiat currencies and their role within society. (Ammous; Nakamoto, Bitcoin: A Peer-to-Peer Electronic Cash System) Their perceived stability and usage also make it harder to disassociate from in the process of value establishment in government issued fiat currencies. No previous currencies like HashCash or BitGold was able to solve the problems of double spending and lacked

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<sup>10</sup> A person who uses strong cryptography to communicate online on the internet and who advocates for the usage of surveillance circumventing encryption standards and Bitcoin.

technological sophistication to operate properly. (Nakamoto, Bitcoin: A Peer-to-Peer Electronic Cash System)

But this has changed in 2008 and a cascade of events has led to new belief that such a monetary system can exist outside of the reach of government that cannot be inflated at will. A monetary system which can serve as a sound alternative to fiat currencies, that can store human produced value due to its programmed scarcity that eventually creates a non-inflationary environment. A digital money that can also serve as a unit of account and medium of exchange due to its inherent properties. And a system which is reinforced by the complex social defensive organization that is built around it and its core value proposition and fundamental basic beliefs. As it is explained in the book called “*The Sovereign Individual*” a whole line of revolutionary effects could derive from the creation of such form of cybercash, that has the potential of changing the world inside out and liberating the individual from the tyranny of authoritarian governments. (Davidson and Rees-Mogg)

We are going to examine Bitcoin here and look at how this can be related to our problem of trust and whether it can solve that problem.

### A. *“Bitcoin: A Peer-to-Peer Electronic Cash System”*

In 2009, an anonymous person, or a group of people, operating under the pseudonym called Satoshi Nakamoto has released a new software called Bitcoin. According to Nakamoto, Bitcoin is an opensource, decentralized digital currency, a form of peer-to-peer electronic cash system that can replace traditional fiat currencies and allow their users to transact without the interference of a third party. Bitcoin is the inventing technology and the main use case of blockchain technology. (Nakamoto, Bitcoin: A Peer-to-Peer Electronic Cash System)

Bitcoin as part of its original design, was the solution for the long-standing double spend<sup>11</sup> problem that previous creators of digital currencies have unsuccessfully attempted to solve. (Nakamoto, Bitcoin: A Peer-to-Peer Electronic Cash System)

Satoshi Nakamoto successfully solved this problem by combining technologies that had a proven track record of past operation and with that improving upon past attempts. (Nakamoto, Bitcoin: A Peer-to-Peer Electronic Cash System)

The Bitcoin Whitepaper was released on the 31<sup>st</sup> of October 2008 onto the cypherpunk mailing list by Satoshi. He in that email stated that he had been working on an electronic cash system that is fully peer-to-peer that not requires the involvement of third party. On the 3<sup>rd</sup> of January 2009, Satoshi Nakamoto have mined the Genesis Block of Bitcoin and on the 8<sup>th</sup> of January the same year, have released version 0.1 of the Bitcoin software. The genesis block of Bitcoin contained the following message set by Satoshi: *“The Times 03/Jan/2009 Chancellor on brink of second bailout for banks.”*

As it is explained in an email release by Satoshi, there are only going to be a total of 21 million bitcoins ever generated and no further coins will be issued. He in the release email clearly stated that the release of bitcoins as reward will cut in half every four years to the eventual point of zero reward per block. Upon the runout of the block reward, he stated that bitcoin transaction fees will eventually replace bitcoin block rewards and might be in the same range based on the increase in fee market competition. (Nakamoto, Bitcoin v0.1 released)

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<sup>11</sup> A double spend is a form of malicious action by someone who attempts to spend their value twice. In different digital currencies preceding bitcoin, it was possible to commit double spends.

Bitcoin, due to its digital nature, can be easily broken down to its smallest fraction of value, one bitcoin consists of 100 million satoshis<sup>12</sup>. In total, there will be a total of 2.100.000.000.000.000 satoshi ever in existence. (Rosenbaum)

Bitcoin network can be accessed by interacting with the Bitcoin protocol on the internet. Users can acquire bitcoin either by exchanging value for bitcoins on exchanges or participating in mining of blocks. We can also earn bitcoins by providing goods or services. (Rosenbaum)

The Bitcoin protocol utilizes public key cryptography, which allows users to transact with each other and spend their bitcoin. A public key is basically a wallet address that can receive transactions. (Nakamoto, Bitcoin: A Peer-to-Peer Electronic Cash System)

When we are spending from a wallet, we spend directly from addresses by using a public key to generate transactions then after use our secret key to sign these transactions. Bitcoin wallets, ever since the adoption of the BIP39, allow users to generate wallets with human readable secret keys in the form of 12-, 18- or 24-word list with which they can access their coins on the Bitcoin network. This key serves as the master key of the whole wallet which provides complete access to funds stored on addresses. Also, this key generates the extended public key which in fact controls the address generation for wallets. (Antonopoulos) Wallets can come in different forms and shapes, like paper wallets in the form of a brainwallet can be printed out (or memorized internally) that contain both the public and private key of a wallet address. Mobile devices can also be used to store or to transact bitcoin over the internet.

Here we can see a Quick Response code containing the public key of a Bitcoin wallet with the receiving address utilizing the latest bech32 address format. These QR codes can be scanned with mobile wallets and we can initiate transactions to the address.

bc1qgdy5grttdc6me29lta7ycdkfcwrcjl44e5dz6z

When a transaction is signed it can be broadcasted out to nodes that receive our transaction which is propagated over the entire Bitcoin network within seconds. If anyone seeks to manipulate a signed transaction the




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<sup>12</sup> Satoshi is the smallest fractional unit of a bitcoin. 1 BTC = 100.000.000 sats. On the Lightning Network, 1 BTC can be broken down to 100.000.000.000 millisats (msats).

master key that signed the transaction is necessary to modify a transaction, in the absence of the private key, it is *nearly* impossible<sup>13</sup> to modify transactions. (Antonopoulos)

Nodes afterwards include our transaction in the memory pool of transactions and dynamically package them into blocks based on the fee of our transaction. When a transaction is included in the mempool, it is queued into blocks according to fee. The fee of a transaction is often dependent upon how large our transaction is and based on that we can set an amount of satoshi that we wish to include as a transaction fee for miners. (Rosenbaum)

These transactions are all transacted on the network and no actual movement happens, only modifications are issued which are recorded on the Bitcoin blockchain. (Antonopoulos)

Transactions are processed via the Proof of Work (PoW) algorithm that miners utilize to process and mine Bitcoin blocks. These blocks contain transactions up to the size of 1 MB, which is the base size which excludes the additional signature data of segwit transactions. (Rosenbaum) With the added headspace of block headers this can be a lot higher per Bitcoin block, up to a theoretical 400.000.000 bytes. (Song) The size and fee of a transaction affects which block it will be included in, due to their dynamic nature, a transaction with a more expensive fee might replace our less valuable fee transaction in a given block and be queued for later confirmation. (Rosenbaum)

Proof of Work uses a hashing function that produces an irreversible hash via the SHA256 hashing algorithm, miners utilize electricity to produce blocks by repeatedly hashing in order to find a number lower than that is calculated by a node's local blockchain. By expending electricity, miners complete the so-called proof of work to find the given hash and the ability to submit a block of transactions onto the Bitcoin blockchain. (Pritzker; Rosenbaum)

When a transaction is committed onto the blockchain, the transaction can be viewed using block explorer services or via our local node via command line function. These transactions can be viewed by anyone on the internet, since Bitcoin is a public and transparent monetary system, it is easy to validate the total amount of bitcoins in circulation and to track the movement of coins within the Bitcoin network. (Antonopoulos)

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<sup>13</sup> Transaction malleability although exists within older version of Bitcoin, with legacy transactions, since the network is backwards compatible, malicious nodes (or attackers) could interfere with the script of a transaction and modify it in a way that the transaction would fail or become invalid. An attacker could re-order the fields on a transaction, that would produce a functionally identical but different ID. This problem was solved by the activation of segregated witness proposal. Due to the technical complexity of the segregated witness improvement, it is out of scope for this paper. (Rosenbaum)

Ever since Bitcoin's inception, in the early days people began contributing to the protocol and the Bitcoin ecosystem began changing. Experimentations were ongoing and careless users managed to lose over 2 million bitcoins that were mined. Some ways of losses included accidental deletion of the Bitcoin core software and defective hard drives. In the early days, users were motivated by curiosity towards Bitcoin, but in 2010 Bitcoin began to wield value when 10.000 bitcoins were exchanged for two pizzas. Over the years, the price of bitcoin began its dramatic ascend, from a fraction of a dollar to almost 20.000 USD in 2017. (Roberts and Rapp)

Bitcoin from the early days have slowly transformed from an object of curiosity to important monetary tool that can serve as a store of value. The main aspect of Bitcoin's value proposition began transforming as more and more people began to find value within units of bitcoin. As others have elected to hold bitcoins speculatively, the price of bitcoin began to ascend. After the meteoric rise of 2012, a wave of speculative trading began sweeping across Bitcoin, the careless storage of user funds resulted in breaches and loss of funds ever since, with the most notable event of the theft of bitcoins from the Japanese Bitcoin exchange Mt. Gox. Ever since the breach at Mt. Gox, creditors have been unsuccessfully attempting to seek damages from Mark Karpeles, CEO of Mt. Gox. (Ammous)

Today, the total bitcoin market capitalization is about 168 billion dollars, at the price of 9352 US dollar per bitcoin on the 29<sup>th</sup> of October 2019.

From the early days of experimentation to the present day of active speculation, Bitcoin has grown into a diverse ecosystem that continues to grow without interruption. As the Bitcoin ecosystem keeps growing, it has become apparent that there is some important mechanism ongoing behind Bitcoin that somehow seems to affect human behavior and perception towards fiat currencies while actively lowering human time preference. (Ammous)

Since the genesis block of bitcoin cites the headlines of The Times newspaper, it became apparent that somehow this monetary system was created in response to the 2008 Global Financial crisis that seeks to provide an alternative sound monetary solution for people without a government or a third party actively managing or manipulating the supply and flow of bitcoins. (Ammous)

Researchers are claiming that, due to bitcoin's inherent properties and functionalities that developed on it, it has become a sound form of store of value while still providing abilities for its users to transact like normal monetary unit of account. In 2019 a stock-to-flow ratio was popularized by Saifedean Ammous in *The Bitcoin Standard*, that later other

bitcoiners also began speculating about the existence of this stock-to-flow. Others mapped out the stock-to-flow rate of bitcoin for the next 15 years, to show there are certain correlation for the increase in value. (Ammous; PlanB, Modeling Bitcoin's Value with Scarcity; Andersch)

Since bitcoin is an engineered form of scarcity operating on the internet uninterrupted in the past 10 years, we must ask the question: How far this system is able to go? As claimed by a research done by Bayern Landesbank, a stock-to-flow<sup>14</sup> ratio of over 100 is unprecedented in human history and such a monetary standard could have unpredictable effects on societies transacting with fiat currencies. (Andersch)

As bitcoin keeps developing, new and new forms of solutions are found for its scaling problems, since blockchain systems are notoriously difficult to scale, layer two solutions were introduced to speed up transactions. The system that achieved this is the Lightning Network that allows bitcoin transactions to settle within seconds using invoices and routing, while batch settling LN transactions on-chain on the bitcoin network to better utilize transactions on-chain. With the introduction of instant bitcoin transactions, the Lightning Network also introduced the concept of milli satoshi, further extending the decimals by 3 zeros that a bitcoin can be broken down. (Antonopoulos)

Since bitcoin functions similarly to gold as per its inherent properties, it often referenced as digital gold that is better in many aspects than gold. (Ammous) Since gold, due to its physical properties, cannot be broken down and transported easily, makes it difficult to serve as a form of currency everyone can easily use. (Caras) But on contrary a bitcoin can be broken down to its tiniest fraction of a given value and is easy to transport.

Bitcoin is also censorship resistant; no third party can censor transactions that are being transacted, these transactions can only be observed on the blockchain publicly.

Bitcoin can also be transacted offline by transporting it in a way that is invisible to others. If we memorize our private key, we can cross borders without anyone knowing that there are potentially bitcoins being transported across national borders. There is also now attempts to enable the broadcasting of transactions via bi-directional Satellites and the one-way transmission of transactions via radio frequency transmissions to a listening station that

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<sup>14</sup> Stock-to-flow here means two things, stock is the amount of metal held by others, and flow means the inflation of the supply that the incoming new metal is expanding the supply with. Gold has a stock-to-flow of just over 50. (Ammous; Andersch)

broadcasts our transaction out to nodes. Only requirement to move these funds later is to have access to the internet to initiate transactions.

Since human beings can agree on the price of bitcoin through social consensus that is enabled for them by the free market, bitcoin has value. Since the speculative holding of bitcoins are given, people store these coins and give it a speculative demand as a value storage that protects produced value from the inherent inflationary effects of fiat currencies. This process is exactly the same as on par with gold, since gold is also bought by others to speculate on its value, implying that the price of gold could rise or counter the potential effects of inflation. (Ammous)

Those people who buy bitcoin and later store them offline essentially have the same type of effect on the value of bitcoin like those who buy gold and store it in bank vaults or at home. These holders of bitcoin essentially determine the demand price of bitcoin, as more coins are removed from trading and the liquidity of bitcoin becomes more rigid and price movement can be more volatile due to less bitcoins being available on the free market. (Adamant Capital)

Often others call bitcoin a Ponzi or a Pyramid scheme because they claim that only those atop can gain value as more users put more money into bitcoin and those people essentially can take out that amount and defraud others of their invested money. Claiming that if someone sells bitcoin the price will eventually crash and nobody else will be able to get back their invested amount. (Monaghan; Ossinger) But this is false, because the price of gold functions similarly and the same effect can be re-produced with gold. If we would sell large amounts of gold in a very short amount of time, we could see the price of gold crash rapidly and could potentially not go back to its original price due to the large order that have cleared through the market. The gold market can also be called this way a Ponzi or a Pyramid scheme. Since a given supply and demand determines the price of bitcoin it can in no way be called a scam, but we must differentiate it from other alternatives that attempt to copy it, all other types of copies of bitcoin are only scams that do not seek anything else other than the enrichment of those who created it.

Since bitcoin appears to fulfill all aspects and properties that a monetary medium must consist of, such as divisibility into the tiniest fraction of a unit and censorship resistance, it could easily be the next step towards the evolution of money. Because of these inherent properties, we are going to examine some of bitcoin's liberating properties.

## **B. The End of Currency Counterfeiting**

Bitcoin's underlying blockchain technology makes currency counterfeiting impossible. No new copies of bitcoins can be produced beyond the set total issuing limit of 21 million bitcoins, and no fake bitcoins can be transacted on the bitcoin blockchain. Alternative currencies cannot be sent to bitcoin addresses because they are not conforming to the consensus rules of the bitcoin protocol, therefore they are automatically rejected. If a bitcoin did not originate from a mined block, every attempt at inflating the supply of bitcoin with fake coins will be rejected by nodes and miners.

This is a long issue of currency that is now finally solved by bitcoin's creation, the problem of fake currency has been an issue of nation states dating back to the first minted monetary metal coins that others attempt to reproduce via forgery. The centuries old issue of counterfeiting is now stands finally resolved.

But let us stop there for a second, because someone could argue at this point that since the introduction of credit and digital money, counterfeiting has been resolved much earlier. In a sense this is correct, because we cannot duplicate PayPal balances, we cannot duplicate our Bank balance, but highly advanced hackers could in theory breach these systems and inflate the balances found on these accounts.

Banks can also duplicate money by issuing credit and maintain a fractional reserve, although there we can also argue that it is a form of fraud because our money is no longer fully there, and we must trust our bank to honor our withdrawal request. Central banks also participate in the duplication of currency that libertarians refer to as a form of counterfeiting by replicating the currency and with that legally increasing the total available count of it. When we refer to counterfeiting there, we must make it in the context of enforced counterfeiting resistance that few currencies can withstand.

The new \$100 USD bank notes were created in response of advanced super copies that were made by North Korea to use it in illicit activities on the open market. These super copies were later deemed very exceeding in ability to bypass checks on its originality; therefore, it became necessary to change the dollar note.

From now on, we do not have to worry about the fact that the currency we accept is legitimate or not, because hacked funds on bitcoin addresses can no longer be reversed. We can easily verify the bitcoins that we accept with a full node on or on the bitcoin blockchain.

### **C. The Separation of State and Currency**

As society started transitioning from nomadic lifestyles, the need to exchange goods began to rise, this led to bartering and usage of perishable goods as a form of value for exchange. Later, this transformed as humans started searching for more valuable value storage forms, like glass beads or Yap Stones, but because of their properties they were easy to inflate by those having access to better technology. (Szabo, Shelling Out -- The Origins of Money) As modern civilization dawn starting with early Roman Empire monetary metals were issued that established the possibility of determining value in units of coins and exchanging goods and services with them. Today's modern civilization uses fiat currencies that saw their monetary metal backing removed as governments transitioned towards fully decree based issuance of paper money. (Ammous) National currencies are backed by governments and their issuance is managed by national central banks. These currencies enable commerce to continue and allow sovereign national states to compete. Often it is a problem that different currencies have different exchange rates due to their given present value. Because of that, exchange of currencies is required when crossing borders into another sovereign nation. A nation also can uphold its status and rank among other nations with its currency and influence others through it. Over the centuries, money has become an inseparable tool of statehood and a symbol of power. (Ammous) Although, there are nations that operate without their own national currency and use a different nation's currency. In that case their power will be limited, as well as dependent upon another nation's central banking policy. Only when these nations are closely united both politically and economically, can the other currency serve their utilizing members' self-interests. These are the formations of friction-less economies that operate with one currency, for example the European Union's Eurozone utilizes the Euro as a common currency for participating member states. These member states can do cross-border commerce without the need to exchange their currencies for another. (Fukuyama; Davidson and Rees-Mogg) Exchange rates between nations often stand as barriers to cross-border trade and introduce further expenses that a company must deal with if its suppliers or consumers are in another country that uses a different currency. (Ammous)

As bitcoin become a reality, this has become unnecessary, because right now value can be established in a non-reproducible electronic unit that is kept safe by a cooperating network of decentralized, interconnected computers. Value is now possible to be stored on the internet safely without the interference of a third party or a national central bank. There

is no longer a need for exchange rates because anyone globally can accept bitcoin as long as there is an internet connection or a solution to relay transactions offline.

This is an important implication because if human beings can reach consensus on the value of a digital unit of a bitcoin, then there is no need for a central bank to issue currency. Bitcoin itself can become a form of money that has inherent value due to its properties. Bitcoin was intentionally designed this way to seeks to separate statehood from the issuance of currency and actively enforce it through its liberating incentives.

Since it is extremely difficult to censor or restrict the flow of transactions within bitcoin, it can easily be seen by human beings as a very secure system that they can use to exchange goods and services. Anyone now can send money to anyone, anywhere in the world without there being a third party being able to control the flow of these transactions.

As an independent monetary tool that humans agree on its usage, bitcoin can immediately establish this separation.

## **D. Freedom from Inflation**

As the separation between state and currency is established, another notable effect becomes a reality, namely, the absence of inflation. Inflation is a process that national central banks use to expand the money supply. This expansion of the money supply decreases the value of a currency over time, which leads to less purchasing power present within a fiat currency. (Ammous)

This is often called by others as a form of free money printing, and it is understood by libertarians to serve no other basis as to take away wealth from those who hold fiat currencies. Inflation inherently makes savings impossible and this effect reinforces high time preference and forces human beings to spend this value immediately. (Ammous)

The problem that the printing of money causes creates a trust issue between the user of money and the central bank and its government, because it is the duty of central banks to prevent the devaluation of a national currency. Satoshi himself mentioned it in one of his forum messages with users, that the history of fiat currencies has been full of these breaches of trust, especially related to trust placed into the banking system. (Nakamoto, Bitcoin open source implementation of P2P currency)

Since Bitcoin's money supply cannot be inflated by a third party or a national central bank, the value of it can be constant. Although some would argue that bitcoin is not a safe value storage due to its extreme volatility. They claim that because of this problem it cannot fulfill the aspects of a stable value storage, for the value of a bitcoin can diminish the next day when we place our hard-earned value into it.

This to some extent is true. Since bitcoin is a relatively new technology, only those users with very high tolerance towards this volatility can utilize the technology properly long term. Most speculators often end up withdrawing value from bitcoin when the value "crashes" and with that losing a large amount of their initial investment. These are usually inexperienced speculators who wish to profit from this type of extreme volatility.

In turn, if we examine the recent explanations about the stock-to-flow model of bitcoin, we can see that long-term Bitcoin's value has been relatively stable, absent of catastrophic value losses. The stock-to-flow model of bitcoin seems to hint that in the future the price might stabilize once Bitcoin eclipses the legacy financial system.

Since the issuance of bitcoin is capped at a total of 21 million coins, this introduced the new aspect of programmed scarcity. This way Bitcoin has a programmed limit that can

be calculated mathematically based on its past performance and we can also this way attempt speculatively to determine the possible fiat value range of Bitcoin in the future.

Since the value of Bitcoin can stabilize in the future, there will be no observable effects of inflation. Bitcoin is designed to become non-inflationary as the total amount of bitcoins is slowly depleted with the use of mining. Value stored in bitcoin can keep its value constant or be appreciated against fiat currencies that will continue to lose value against it. As more demand is there for bitcoin, the value is expected to continue to appreciate over time. As less and less coins are lost as the storage methods improve, there will be less and less deflationary effects affecting users of bitcoin. Deflation will also not be a matter of importance to the users of bitcoin because one bitcoin can be easily broken down to the smallest fraction of it.

This inherent ability of bitcoin to show human beings that their produced value can hold value can lead directly to the re-normalization of long-term savings and to the decrease in the usage of credit. Since now anyone can save up money over time to afford better quality products in the future, it is no longer a necessity to reach for credit anymore. In the current system, the line of credit automatically robs consumers from future profits and better products as they attempt to satisfy their immediate needs.

### **E. Circumventing Authoritarianism with the use of Bitcoin**

As governments all around the world slowly become bigger and more controlling of their citizens' lives, the more breaches of freedom and liberty can be observed. Authoritarian governments or those who seek to exert violence on a population can easily enact laws and regulations that allow them to exploit their citizens. Although it is questionable whether all such forms of abuse can be linked to authoritarian establishments, because most of these cases can often happen in democratic countries, too, as we will soon observe it.

For example, in the United States it is not uncommon that transported cash en-route is caught by police and confiscated under Asset Forfeiture Laws. Police in certain states in the United States can confiscate physical cash from individuals under the slight pretense of suspicion from individuals. These cases often come with charges related to money laundering and cash originating from the drug market. As more than 90% of the total circulating supply of physical US Dollars are contaminated with traces of cocaine (Pesce; Pilkington), it is just a matter of time when substances found on paper notes might be used against civilians to assist police in the confiscation of cash. It is also difficult to carry cash across borders; many individuals came across a problem of transporting their wealth across border and witnessed only at the border that their money was confiscated with no possibility of ever getting it back from the US Customs and Border Protection.

In Venezuela the Maduro Regime controls the flow of currency in the country, the usage of the Bolivar is mandated by the government. As the value of the Bolivar is rapidly diminishing over time due to the rapid printing of currency, new forms of barter tools were necessary to use. Locals began using cigarettes and food products as payment options when paying for goods and services, for example exchanging a package of toilet paper rolls for gas on a petrol station. In many senses the power of authority comes from the issuance of currency for most authoritarian regimes and for democratic ones. By inflating the money supply, governments can exert totalitarian control over the population and make their movement and activates centrally controlled.

In South Korea, it is illegal to exit the country with physical bank notes and in Iceland it was illegal to use a different nation's currency for exchanging goods under the Foreign Exchange Act of Iceland<sup>15</sup>, which was later amended to allow it. These mandated restrictions

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<sup>15</sup> The Foreign Exchange Act of Iceland was enacted in response to the 2008 Financial Crisis and sought to prevent the outflow of capital from Iceland to foreign countries. Essentially the use of Bitcoin in

on the usage of currencies seem to show a clear tendency towards enforcing sovereign national interest at the expense of citizens. Bitcoin usage in Iceland is for example was banned, as it was considered foreign because it was not issued by the Icelandic Central Bank and their users faced fines if they break the law. However, the law cannot be enforced because the physical transaction origin of bitcoins can be hidden and only a movement on the blockchain can be observed.

The main problem Bitcoin fixes here is the confiscation and control of flow of value between human beings. It is an **inherent ability** of *Bitcoin* to **circumvent** all forms of **Financial Censorship**. Due to bitcoin's properties, it cannot easily be confiscated, and its flow cannot be restricted. Bitcoin can also circumvent legal frameworks of nation states. Citizens who do not agree with certain laws or regulations can always decide to opt for civil disobedience (or in certain other situations, straight out resistance against a government) and refuse cooperation with such authorities that try to take away their own wealth that is stored in bitcoin. In a dictatorial state, bitcoin can be used to completely circumvent government control and re-establish individual financial freedom. Although there might be a possibility for a government employing totalitarian surveillance, bitcoin can also provide liberating abilities because it can be used for any means that a government will not be able to censor, therefore it is arguable also that it can restore liberty. If we are oppressed in our own country, we can use, in theory, bitcoin to flee a country and finance our escape with it, if someone accepts bitcoin, then the possibilities are endless.

**A bitcoin private key that is protected by a strong passphrase is completely protected against all forms of physical confiscation**, as long as the individual is able to access the private key uninterrupted. **Even if physical copies of the private key are stolen, a government can do little to access the bitcoins on an address hidden behind a passphrase.** Even the *decentralization of storage* of private keys and *usage of multi-signature hardware wallet solutions* provide a further step towards resilience of personal wealth.

Bitcoin in this perspective is a sovereign form of monetary system, because it enables the enforcement of the self-interest for individuals. Governments that seek to interrupt it or ban it, will fail because of the organization of bitcoin's ecosystem and active protection provided by its users. (Taleb, Bitcoin) We will follow up on these aspects in a later chapter.

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commerce was prohibited until the law was amended in 2017. (Ministry of Finance and Economic Affairs of Iceland)

*i. Bitcoin Improvement Proposal 38-39*

The Bitcoin improvement Proposal of BIP38<sup>16</sup> (passphrase protected paper wallets) and BIP39 (mnemonic code for generating deterministic keys) was a major milestone in this process of creating a truly sovereign form of money.

The solution that BIP39 provided was the generation of the secret key to a bitcoin wallet in the format of human readable word format that consist of 12-, 18- or 24- word combinations. This list contains 2048 words in total and these can provide strong random variations when creating a key, therefore guessing it is astronomically difficult. Therefore, to guess an address that could contain any amount of bitcoins we would have to find one from the total of  $256 \times 2048^{23}$  which, if we put into a calculator we can see, will be nearly impossible. (Rosenbaum)

The introduction of human readable words also makes it easier to store it, 24 words can be written down and stored safely or even memorized. The introduction of passphrase protected paper wallets also made it possible to introduce a 25<sup>th</sup> word<sup>17</sup>, that is the passphrase that can be anything.

The combination of these two features makes bitcoin very resilient to all forms of confiscations.

*ii. Wikileaks*

In 2011, the whistleblowing news leaks site, WikiLeaks began accepting bitcoin as a method of donation after Bradley Manning leaked secret military files and communications that had shown that members of the US Military murdered civilians and journalists working in Iraq. As sanctions began targeting WikiLeaks founder Julian Assange, financial pressure was put onto the whistleblower website to attempt to halt its operations. Major payment processing companies began blocking donations and in response Julian Assange announced that to counter these attempts at censorship they would be accepting bitcoin donations. A Bitcoinist article speculated that in 2019 WikiLeaks amassed over 4000 bitcoins ever since the donation drive in bitcoin began. (Avan-Nomayo) Since the movement of bitcoins can be

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<sup>16</sup> This is an example of a mnemonic key: 1. VISA 2. EXIST 3. FLAG 4. DEPOSIT 5. ESCAPE 6. CONVINCED 7. FUNNY 8. CLIFF 9. STEP 10. CRYSTAL 11. FEATURE 12. OWN 13. PACT 14. MAIL 15. HARVEST 16. SADNESS 17. SEARCH 18. GHOST 19. OFFER 20. INCH 21. MERGE 22. FEW 23. TIRED 24. SNOW

<sup>17</sup> The 25<sup>th</sup> passphrase word can be anything up to 100 characters long.

verified on its public blockchain, we can personally verify its truth content. It is subject of speculation whether WikiLeaks is still sitting on these funds or have used it to fund its own operations.

The 2011 case of WikiLeaks accepting donations in bitcoin shows how resilient the system is against attempts of financial censorship.

In the next chapter, we are going to look at the programmed protection layers of bitcoin, how they look like and what kind of effect they have on the broader ecosystem. Since now we understand narrowly how bitcoin functions, we can now see how functions of bitcoin and changes that were made to it protect it actively against forms of censorship and third-party interference.

### **III. Censorship Resistance of the Bitcoin Protocol**

Bitcoin often finds itself in the midst of attacks on its network propagated by the actions of financially charged third parties and state actors. Some advancement in its development was created to solve these problems that could arise in the future and to mitigate potential attacks against its users. Since it is implied that Bitcoin is constantly under attack and not just on-chain attacks are possible, any form of social-engineering attacks could also target its users that could disrupt the total cohesion of the ecosystem.

These integrations and improvements exist to make the use of bitcoin safe, secure, and hard to censor, essentially putting power into the hands of the users.

If a government would seek to interfere with the use of the Bitcoin Protocol today, there are many new solutions and advancements built around its underlying core technology that make it censorship resistant.

We are going to look at these notable features relevant to this given problem of censorship and interference in the following sections.

#### **A. “Just pull the plug out, and the problem is solved!”<sup>18</sup>**

Due to misconceptions, some non-users think that it is possible to shut down bitcoin by shutting down the network, but this is a false conception. Bitcoin nodes and miners operate decentralized in many countries across the globe and this makes authoritarian attempts to shut bitcoin down nearly impossible. In order to shut down the network, one needs access to every country where nodes and miners are operating, and these countries have different legislations and laws that make it very difficult to process such demands, especially if a country is a hostile one towards another and they are unwilling to cooperate with one another. Corruption can also make it impossible or extremely hard to get authorities shut down the infrastructure to nodes and miners. The system has reached such scales that it can no longer be shut down. Even if it is damaged, it is designed to survive such attacks and continue operations uninterrupted. Therefore, shutting down nodes and miners is extremely difficult if not impossible. (Pritzker) Due to Bitcoin’s inherent properties, it is considered widely among Bitcoiners to be an antifragile monetary system. (Taleb, Antifragile)

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<sup>18</sup> Referenced as spoken by Professor Laszlo K.

## **B. Bitcoin, Software as a form of Absolute Truth**

Bitcoin is unique, it is the only existing system that is built on computers and on the principles of mathematics. Bitcoin itself is a form of distilled truth, an absolute reality not impeded by anyone's reality. The monetary system's total capacity, as well as the amount of rewards given to miners, can be mathematically verified. The Bitcoin network can be held to account towards its correctness and truthfulness because the decentralized groups of miners constantly verify and re-verify the total amounts of Bitcoins in circulation. If we attempt to create more Bitcoins the system refuses that and rejects the transactions because they do not originate from a block and the reward was never issued by a node for a miner for the successfully found block. (Ammous)

This total verification model allows us to be in complete possession of truth, just by running a simple computer code on our Bitcoin full-node wallet software.

`bitcoin-cli gettxutsetinfo` – This command here will return us the most recent block height, the Bitcoin blockchain's total size on the hard drive and the total amounts of Bitcoin released in total up to the last mined block.

`bitcoin-cli getmininginfo` – This command will return the total hash power of the available miners and the block difficulty which governs how difficult it is to find a correct hash to mine a block. (PlanB, Verification of Monetary Supply of Bitcoin)

This way, Bitcoin made it possible for everyone to be able to verify it. This programmed truthfulness is unique in the world because everything in our reality is just a perspectival form of reality that only exists in our own reality, but Bitcoin's truth is absolute. (Ammous) In turn, we cannot gain access to Banking records, we cannot gain on demand access to financial systems to audit them and hold their operators to account. It is this inability to properly oversee financial systems and institutions that essentially led to the 2008 Financial Crisis. (Servon)

This direct access for the ordinary person to audit the monetary supply makes it essentially an amoral<sup>19</sup> form of sound money and allows the user to prosper under its system with the knowledge provided for him on demand. The knowledge creates stability and progress for society as a whole as argued by Friedrich A. Hayek, and can be applied in the context of Bitcoin this way to create a form of sound money that cannot be inflated by anyone,

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<sup>19</sup> As in lacking morality that could impact human life, since it is in its purest form Bitcoin is only a monetary tool that serves human beings as a payment system.

cannot be censored and cannot be impeded upon by anyone in any way. (Hayek, *The Use of Knowledge in Society*)

### *i. On-Chain Privacy*

Some users of Bitcoin claim that since Bitcoin is a radically transparent monetary system, the privacy of its users can easily be compromised. They claim this is made possible because of the lack of on-chain privacy present in Bitcoin. For, anyone can follow the transaction of users since the history of those transactions permanently stays visible on the public Bitcoin blockchain. Some of these users and developers have been proposing changes to Bitcoin that make these transactions hidden on the Bitcoin blockchain. These proposals would in theory make the complete movement of bitcoins invisible on the blockchain. Certain technologies already exist that make these potentially possible, but with extreme consequences if the technology is faulty or if their implementation could allow malicious actors to compromise the network. One main issue that on-chain privacy creates is the possibility of hidden inflation. Malicious actors could use methods to print bitcoins out of nowhere to inflate the supply of bitcoins without the network or the users of Bitcoin being aware of.

The underlying aspect of absolute truth availability is necessary for the ability to not require initial trust in the usage of Bitcoin. If a technological modification would alter the underlying functionality of this verification process, thereby violating the philosophical principle of fact-fullness, initial trust in the creator of Bitcoin would be ultimately necessary. Only such technologies can be employed and activated on the core layer of Bitcoin that do not violate this given philosophical aspect. If we cannot establish a returned information as being completely factual representing the given state of reality of the present status of the network, then the purpose of bitcoin, which it was created for, ceases to exist.

Of course, if on-chain privacy would ever be proposed, there are many other factors that must be accounted for. One of the most important danger is fragile forms of privacy providing solutions that provide only a false sense of privacy. If quantum computers would be able to undo those protections, the damage done to the privacy of the users would be unforeseeable, with unpredictable consequences.

This is the sole reason alternative solutions, that are proclaiming to be better sound alternatives to bitcoin, fail, because they cannot fulfill this basic underlying principle.

Privacy protecting options already exist for users of Bitcoin that can safeguard their on-chain privacy by providing accountable solutions that do not violate the philosophical

principle. In a later section within this chapter we are going to look at these problems and their solutions more in depth.

### C. Bitcoin Node

A Bitcoin node is a software or device that runs the Bitcoin protocol, with a software similar like 'bitcoind', and itself can be run on servers and on desktop environments. These nodes contain the full or partially pruned database of transactions all the way originating from the Genesis Block to the latest block height of valid block mined by a miner. In the past, Bitcoin nodes were combined devices that allowed the mining of bitcoin, but due to the infeasibility of such activities because of resource intensity on consumer computers, this was later separated. Notable implementations are the reference Bitcoin Core application that downloads the entire Bitcoin blockchain onto the user's device. Nodes verify blockchain consensus rules by enforcing the core properties of the Bitcoin network. When a miner<sup>20</sup> finishes a proof of work process, it then gets the ability to submit the found block onto the Bitcoin blockchain. Before that happens, nodes must verify that the miner has found the correct hash that was set out as a requirement to find and submit the block that contains the transactions. If everything is in order, then the block is put onto the blockchain, it will attach to the preceding block and all proceeding blocks will be attached to this block. The chain of blocks is called as blockchain. Originally Satoshi Nakamoto referred to this as a time chain but later changed his wording to blockchain. (Graff)

Bitcoin nodes also serve an important role within the Bitcoin ecosystem. Due to their ability to enforce consensus rules, the nodes are of higher authority in the ecosystem due to their voluntary operational basis. Although Bitcoin nodes can no longer mine blocks, they must cooperate with miners in order to include new blocks on the blockchain.

When a miner produces a correct block, it<sup>21</sup> receives a reward from the Bitcoin node network for finishing proof of work properly. When a miner attempts to produce false blocks, the nodes reject those blocks and do not provide a block reward for false blocks. Therefore,

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<sup>20</sup> A miner is a computer software that hashes repeatedly to find a bitcoin block.

<sup>21</sup> 'It' is used here because miners are automated computer software running on computers or application specific integrated circuits. In shorter name ASIC is a computer specifically designed for a given computational task to perform, here in this case ASIC miners are used to mine Bitcoin to be more cost effective and profitable.

nodes are essential units of the defense mechanism of the Bitcoin network in relation to transaction processing, and act as a last line of defense against malicious miners. Although a 51% attack could be used to produce blocks, the nature of the proof of work algorithm promotes adherence to the consensus rules to receive block rewards. Attacking the Bitcoin network comes with extremely high costs due to the expended energy that is required to produce the correct hashes that allow miners to submit blocks to nodes to include them on the blockchain.

Nodes other than storage of transactions serve as a defensive layer against coercive enforcement of core layer changes on the Bitcoin protocol. When miners attempt to collaborate to enforce changes to the core protocol of Bitcoin, they can opt via a user activated soft fork to block such attempts and signal for miners that if they proceed with such changes in base function then they will reject their produced blocks, wasting the energy that was used to produce them. During the Segregated Witness protocol upgrade of Bitcoin, node users prevented collaborating miners from enforcing changes on the protocol by opting to proceed with their own change in function. The group of users who collaborated to increase the block size of produced Bitcoin blocks had their attempts countered by the UASF (User Activated Soft Fork) movement when they attempted to impede upon the basic principles of the Bitcoin protocol. Bitcoin Cash raised its block size beyond the amount that Bitcoin node users allowed it to, during the UASF. Essentially afterwards the Segwit Activation was done with the 1MB blocks, the NO2X movement blocked the increase of block size to 2MB blocks.

Since the increase to 2MB blocks would have led to an increase in the total size of the Bitcoin blockchain. (Song) The supporters of UASF and NO2X movement claim that this would have led to less nodes running and more demanding storage requirements for full nodes, with that decreasing the ability of the network to protect against such forms of attacks. When we consider the overall effect of a later hard fork of Bitcoin Cash to BCH ABC and BCH SV, we can see that BCH SV attempted iteration of forked Bitcoin protocol relies on mass centralized storage of the block data in centralized data centers. (Block Digest)

When we examine this effect of centralized operation of Bitcoin nodes, we can realize that these centralizations are a digression from the core principles of decentralization and could be claimed as an attempted attack on the Bitcoin network to further weaken it. State actors that push the node operation out of the hands of the users can now more easily coerce node operations in data centers to push through core protocol or consensus changes in Bitcoin that could weaken the network or allow them to censor or interfere with the whole network. Operation of nodes on centralized datacenters allows third parties or state actors to

censor their operation or even shut them down by forcing these datacenters that host them to cut access to them or permanently shut them down. Therefore, such attempts to control the development of the network should be viewed as a form of attack on the core layer of the Bitcoin Protocol.

#### **D. Offline Bitcoin Transactions**

Bitcoin can be very similar in some context to paper money transactions, because a brain wallet can be printed out onto paper and later exchanged with another person for goods or fiat currencies without anyone seeing a trace of the transaction on the Internet or the Bitcoin Blockchain.

Similarly, hardware devices (like the OpenDime credit sticks from Coinkite) that contain any amounts of bitcoin can be given away safely without exposing the private key.

A Bitcoin BIP39 private key can also be exchanged with others but this is not recommended because anyone can copy the private key or, if it is directly visible, anyone can potentially move the funds after exchanging goods.

Although, these methods don't come without possible negative consequences. For example, brain wallets could get damaged, especially since most of them are printed out onto paper when exchanged, and the QR codes and private key could become undecipherable if it gets damaged, potentially risking complete loss of funds this way.

Physical attacks during exchanges of bitcoins can also be a risk. There have been confirmed cases of attempted attacks against Bitcoiners who attempted to exchange their bitcoins for fiat currencies during in person meetups in public places.<sup>22</sup>

Although if we want to move bitcoins from one wallet to another, it becomes necessary at one point to broadcast a transaction onto the internet, but the generation and broadcasting of that transaction can be done isolated from the internet, thus being referred to as an offline Bitcoin transaction while it is not handed over to a network of Bitcoin nodes.

There are also other forms of offline transactions that do not touch the internet in any form in certain stages of its transit, which we will look at next.

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<sup>22</sup> Jameson Lopp maintains a database of crimes committed against bitcoiners and those transacting with bitcoin on a github repository that can be found by following this link: <https://github.com/jlopp/physical-bitcoin-attacks/blob/master/README.md>

*i. Partially Signed Bitcoin Transactions*

Partially signed Bitcoin transactions are a new isolated way of transaction generation and signing of the generated Bitcoin transaction. A computer software like Electrum<sup>23</sup>, Wasabi Wallet and mobile wallets like Samurai Wallet's Sentinel application can generate transaction information by using an extended public key of a Bitcoin secret key that contains all the addresses (virtually everything, but only those necessarily that contain amounts of bitcoin) associated with a given secret key. When a transaction is generated, a data file is created that can be moved to another device, this is called as an unsigned transaction file.

After the file was moved to another computer or a dedicated hardware wallet that is capable of transaction signing, it can be signed using the private key of the given address which then generates the final transaction data. Afterwards the transaction, data can be moved back onto a computer again or a broadcasting device that has access to the internet, these files can be then loaded into Electrum Wallet, Wasabi Wallet or the android mobile bitcoin wallet called Samurai Wallet and then it can be loaded and then broadcasted out onto the internet to bitcoin nodes that will put the transaction into the mempool if our transaction is valid.

This is one of the most favourite transaction type among some Bitcoiners because of its most cypherpunkesque method of isolation of the transaction data that makes it very resistant towards man in the middle attacks. The generated transaction file, when signed, can no longer be deciphered preventing others from altering the transaction. The only way to change it is to have access to the private key on the signing device. Without it, it is certainly not possible.

Hardware devices that currently exist, for example the ColdCard Wallet by Coinkite, are the only notable devices right now that can sign such transactions and securely handle its process while being completely isolated from the internet.

Such transactions are also very handy because they can be broadcasted onto the internet in many different ways that can potentially circumvent censorship attempts.

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<sup>23</sup> Electrum is a lightweight Bitcoin wallet.

## *ii. Bitcoin over Satellite*

Recent development made the company called Blockstream have made it possible for Bitcoin users to access satellites in orbit via home satellite dishes, that we used for TVs and other devices, and the network of satellites can be now used to sync the Bitcoin blockchain.

At the present time there are a total of 5 satellites covering most major population centers of Earth that can be used for such purposes.

Also, what is not possible is to use these satellites to broadcast messages back onto the planet. This makes it possible also to send signed Bitcoin transactions for others who can afterwards broadcast the transaction onto the internet.

As of today, Blockstream is actively working to make it possible to use their satellites for two-way communication with Bitcoin wallet applications.

The necessary equipment that is needed for communication with these satellites is very inexpensive. About under 60 dollars makes it very affordable to access the satellite network with cheap re-usable equipment which makes it possible to access network after the necessary setup procedures.

This is also a very useful tool to circumvent potential censorship of Bitcoin transactions because satellites cannot be effectively censored by state actors. Users can also send messages to these satellites that get re-beamed back onto Earth by these satellites to receiving users, with the same satellite dishes, who can then read the content of these broadcasts.

### *a. @SatNode: Blockstream Satellite Transmission Feed*

Alternatively, although not a form of Bitcoin transaction, the Blockstream Satellite can also be used to broadcast messages onto the micro-blogging social media site like, e. g., Twitter. Bitcoin users who have a lightning wallet can use the official Blockstream website or the lightning wallet bot called Intxbot on the online chat application Telegram to broadcast messages for a given fee determined in satoshis. After the broadcast was successfully received and broadcasted, these messages get put onto a Twitter bot account, located at the handle @satnode, with the original message and links to the messages on a separate website.

SatNode, which is operated by the Twitter user @notgrubles, had already the bot account suspended multiple times due to some users using the satellites to broadcast profanities targeting users, holders and developers of shittcoins<sup>24</sup>.

Although the majority of messages are not offensive, this anonymous broadcast ability of instant messages via satellite seems to serve the ultimate purpose of strengthening freedom of speech and providing access to mass communication services to the ordinary citizens, services that can be often censored by democratic and authoritarian governments alike.

### *iii. Bitcoin over Radio Frequency Signal*

Rodolfo, a Canadian Bitcoiner, programmer and hardware company owner was the first recognized person who conducted a radio frequency transfer of the bitcoin transaction data.

The first transaction was made on the 12<sup>th</sup> of January 2019. It consisted of a bitcoin transaction to an address from a brain wallet on a computer, and the transaction was made over a JS8Call over the 7.077Mhz radio band from Toronto, Canada to Michigan, USA. Later the transaction was returned from the USA using a bech32 native segwit address type.

On the 1<sup>st</sup> of March 2019, Rodolfo again conducted a transaction, but this time broadcasted a lightning transaction (from now referred to as LN) invoice via an iNet 21 message, from Toronto, Canada to San Francisco, California. From that location, the other person was able to scan or sweep the invoice into a wallet and send the transaction for Rodolfo. Rodolfo's LN transaction was received by multiple receivers but only one person has sent him a transaction using his onetime usable generated invoice.

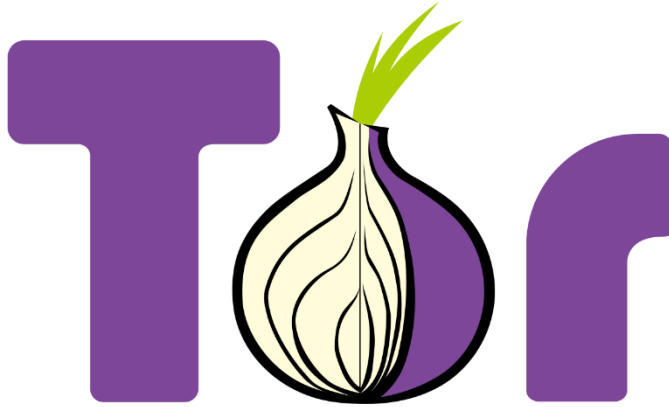
This kind of transaction that was made shows that Bitcoin has reached a very extended level of censorship resistance, because not often it is possible to censor such radio broadcasts or interfere with their broadcast. If a country is blocking Bitcoin transactions, the transaction can be just broadcasted over to other countries where listening stations or other people receiving these transactions can broadcast it out from their location in another country onto the internet.

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<sup>24</sup> Alternative cryptocurrencies that are inferior to Bitcoin. We will discuss the origin of this word in a later chapter.

### E. Tor Layered Censorship Resistant Bitcoin Integrations

The censorship resistant properties of the Tor<sup>25</sup> protocol that anonymize its users is already being used to protect the users of Bitcoin wallets and Bitcoin nodes from third party, government snooping and interference.



While the Bitcoin network cannot be anonymized with the use of Tor, in theory, it can be used to protect end users and node operators. Every Bitcoin transaction that touches the internet can potentially be viewed by third parties and government agents, exposing the IP address and

potentially deanonymizing the user.

By using Tor, the origin of the broadcast can be protected, the IP address does not leak out onto the internet, this way protecting the broadcaster of the transaction from having their identity compromised.

When such an integration is created for node operators, they can sync the Bitcoin blockchain and handle all Bitcoin protocol operations via Tor. This way Tor gives an added level of censorship resistance for the Bitcoin Network by protecting the node operators from potential government overreach of power or intentional censorship. By running the nodes through the Tor Network, it becomes harder to find node operators and with that much harder to shut down nodes if a corrupt or authoritarian government would seek to shut it down.

However, the usage of Tor is not a silver bullet because certain communication data can leak out for Internet Service Providers. Data like HTTP/HTTPS requests and DNS queries can be still discovered by our ISP (Internet Service Provider) which then could be reported to the Police or Government Agencies. (BTCPay Server)

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<sup>25</sup> The Onion Router was developed by employees of the US Naval Research Laboratory to protect that of US intelligence operative's online communication. (The Tor Project)

Wallet integrations already exist that make use of this technology, like Wasabi Wallet<sup>26</sup>, Samurai Wallet<sup>27</sup> and Blockstream Green<sup>28</sup>. These integrations attempt to make interaction with the Bitcoin network safer for those who might else be censored or have their finances controlled by governments. Although, other applications running on our computer or mobile phone could snoop data and traffic information, invalidating such protections very easily. In the hands of an inexperienced user, these tools could easily be compromised without their knowledge.

There are also ‘bitcoind’<sup>29</sup> node (and lightning network LND node) integrations that seek to function within a Tor enclosure. For example, these can be found in some of the most notable nodes and node packages like BTCPayServer<sup>30</sup>, MyNode<sup>31</sup>, Samurai Dojo<sup>32</sup>. Although only a fully independent installation of Samurai Dojo offers full protection without leaking any HTTP/HTTPS and DNS queries, BTCPayServer might leak such information due to having some of the added extensions and variables outside of the scope of their control.

Bugs in code might also exist and ultimately negatively affect these protections, therefore there is no foolproof solution for completely anonymizing a Bitcoin node.

When such integrations are used, wallets can connect via the Tor network to trusted Bitcoin nodes that make the verification of transactions much more reliable while in theory preventing potential third parties like Chainalysis that seek to associate identities of users with Bitcoin addresses.

Chainalysis runs Electrum Private Servers<sup>33</sup> to collect IP addresses of Bitcoin users who interact with Electrum Wallet, with that attempting to completely deanonymize users

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<sup>26</sup> Wasabi Wallet is a desktop Bitcoin wallet that also allows coinjoining through its coordinator.

<sup>27</sup> Samurai Wallet is a mobile Bitcoin wallet that allows coinjoining through its Whirlpool service.

<sup>28</sup> Blockstream Green is a Bitcoin mobile wallet that also allows access to Blockstream’s Liquid Network.

<sup>29</sup> “bitcoind” is the first node software and protocol that implemented remote procedure call (RPC), it is also the runtime for many Bitcoin nodes and Bitcoin full stack environments like BTCPay Server.

<sup>30</sup> BTCPay Server is a self-hosted full-stack business solution for bitcoin accepting businesses and private individuals.

<sup>31</sup> Is a Bitcoin Node full stack with many additional functionalities.

<sup>32</sup> Samurai Dojo is a private Bitcoin server for Samurai Wallet users that allow self-hosted interaction with the Whirlpool coordinator without exposing our IP or xpub keys.

<sup>33</sup> An Electrum Private Server is a private node that can receive connections from Electrum clients, which in return allows private queries of blockchain headers and other blockchain data. It makes the querying

and link their transactions on the Bitcoin blockchain. Although Electrum can connect through Tor Browser's SOCKS5 proxy, it is still not considered as private when used without a self-hosted Electrum Private Server.

Easy installation of node software is also essential for the full protection of the Bitcoin network, therefore lack of ease of access to node software and packages and very complex installation procedures can be detrimental for the entire Bitcoin ecosystem. Other than Samurai Dojo's full node package, there is no such integration today that would effectively solve the problem of making the operation of nodes completely hidden before the eyes of government.

A perfect theoretical Tor integration would not leak any communication data between the node and the Bitcoin network and would keep all contents of the messages sent between the server and the network encrypted and undiscoverable by outside observers of traffic communication. While this is not entirely possible, some solutions get very close to this, with that aiding the censorship resistance of the Bitcoin protocol and the personal safety and privacy of its users.

## **F. Bitcoin Privacy, Fungibility and Anonymous bitcoins**

As privacy slowly comes to the forefront of debates, the problem of Bitcoin's extreme transparency causes distress to some users who feel that this radical transparency can potentially endanger them in the real world. Since every user's transaction is visible on the blockchain, we can follow the movement of bitcoins. If we are able to identify an owner of certain coins, we can follow the complete path and origin of those funds. For some, this is a catastrophic flaw that allows others to impede upon other's personal financial privacy.

The closure of SilkRoad proves that there was a massive misconception about Bitcoin's privacy capabilities, but since the Federal Bureau of Investigations was able to trace back the origin of certain tainted bitcoins, they were able to shut down SilkRoad's operation and apprehend Ross Ulbricht. This is one reason why terrorists don't use Bitcoin, because they have to be able to withdraw into fiat currencies their earnings and that must be done through some form of exchange which is connected to tax authorities, who can immediately flag their transaction then that allow counter-terrorism forces to apprehend them. It is highly unlikely that terrorists who use bitcoins are even properly able to

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of transactions for wallets more private by concealing the IP address of the desktop wallet from other servers. It can also relay transactions and this way no xpub information leaks out onto the internet.

understand its basics of value. Instead, it resembles a temporary transaction medium that they can move later to exchange for cash, since virtually nobody accepts coins from them. (Frisby)

In today's world, paper money's functionalities reflect that of anonymity, because when we are exchanging paper money, or coins, their movement is invisible and each USD that is not counterfeit, is basically fungible. Within Bitcoin, this is on the contrary because we can follow the movement of coins and can easily have them "tainted" manually. Exchanges can red flag coins and make their spending extremely difficult on KYC<sup>34</sup> enabled exchanges that are required to comply with Anti-Money Laundering<sup>35</sup> and Counter-Terrorism Financing directives.

These tainting of coins soon could be causing issues for the users of Bitcoin, who use bitcoins similarly like physical cash. Some users came across unwarranted action by police and the law when getting into touch with tainted bitcoins that somehow touched illegal activities, for example coins that participate in exchange of psychoactive substances that later ended up in the hands of a consumer. It can be speculated that such coins could be considered illegal by certain state's authorities. (Vauplane)

The problem we have already examined in relation to *On-Chain Privacy* within this chapter, is still in the forefront of this debate that many often cite as an important future battleground of Bitcoin that is about to happen. The quest to restore fungibility of bitcoins is now an especially important topic within the online bitcoin space among users.

Some of the earlier proposals like the Mumblewimble (Nicholson) proposal seek to restore this privacy on-chain. However, as it was implemented in different alternative blockchain copies of Bitcoin, it become proven that it is in essence a failed proposal that can't function properly and its perceived privacy benefits are non-existent. (Bogatyy)

Other centralized mixing services<sup>36</sup> started operating that promised to mix the coins of users to return their anonymity, but usually these activities were not safe due to their trust requirement and often ended up shut down by Police as part of Interpol operations against

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<sup>34</sup> Know Your Customer is a mandatory financial regulation that forces businesses to profile their users for legal compliance reasons.

<sup>35</sup> Anti-Money Laundering directive that seeks to halt all forms of money laundering and some also applies to halt illegal financing of terrorism.

<sup>36</sup> Mixing services are (often) trusted third party services that mix bitcoins with other coins to the point that they can not be traced to their origin. One notable mixer was BestMixer.io which was shut down by Dutch Police and Europol in 2019. (Europol)

these mixers. Users who sent their funds to such mixers that were shut down by police never managed to get their coins back. The case of Bestmixer.io was a notable case in the Netherlands where a multi-country cooperation brought down the site. (Beedham)

One of the most notable way of obtaining anonymous coins is via Bitcoin Automats (BATMs) that accept paper currencies in exchange for bitcoins. If nobody observes our activities, the ownership of the coins is in theory very difficult to establish, even if proper coin control techniques are employed. (Schoenberg and Robinson)

As on-chain transaction analysis started to proliferate, governmental actors began contracting the company Chainalysis to track the movement of bitcoins on the blockchain. They began developing methods to track and de-anonymize users and potentially associate real-life identities. It is a well-known fact that Chainalysis operates Bitcoin Electrum Private Servers in order to track transactions and associate coins with their IP address that they originate from. Chainalysis later can sell the data or offer it as a service for state actors to violate the privacy of unaware users.

Eventually Chaumian CoinJoining came to the forefront of this battle with the first implementation of Join Markets and afterwards the ZeroLink protocol implementation. (nopara73 and TDevD, ZeroLink: The Bitcoin Fungibility Framework) The ZeroLink proposal is very notable because it completely breaks on-chain analysis with that making the work of Chainalysis impossible. Some users although claim that these solutions are not enough and fail to achieve true coin anonymity because of the possibility of being able to calculate the origin of the mixing output. As opposed to that, it is also argued that in order to be able to revert these outputs and deanonymize their origin at least minimum of a quantum computer is required. (Harmat and Molnar)

The ZeroLink proposal has two separate implementations, Wasabi Wallet and Samurai Wallet's Whirlpool, and both have their own distinct way of implementing these coinjoins.

#### *i. CoinJoining*

CoinJoining works by mixing multiple individual input transactions and generating an output transaction on the blockchain that contains multiple equally numbered Bitcoin outputs. For example, if we have Alice, Bob, Sam and Lisa who own respectively 0.2, 0.2, 0.3, 0.4 bitcoins, these transactions are broken down via a coordinator's help to 0.1 outputs, generating 11x 0.1 bitcoin outputs all within one transaction. On the output side it is difficult to know which of these transactions came from whom because of the way these were mixed

by the coordinator, with that breaking others ability to distinguish their origin. When done, these transactions look indistinguishable on the output side with that restoring privacy to a certain degree for mixed coins.

As the input user count keeps climbing, the higher anonymity sets<sup>37</sup> can be achieved, further strengthening the fungibility of bitcoins. As these coins have their privacy restored, they are able to function as a form of physical cash since the bitcoins' origin cannot be traced back. However, some would claim this is a form of money laundering, which could be possible because after an output the coins can be spent without anyone knowing which coin belongs to who, it cannot be used to avoid taxes. Tax avoidance is impossible because as we mix coins the tax authority still implies that we own the same amount of coins that we have mixed and during a deposition audit a tax agency can imply that we still own the same amount of coins. (Harmat and Molnar)

Rest of the mechanism of coinjoining is out of scope for this thesis due to their extremely technical nature. Therefore, anyone wishing to learn about coinjoining should read the ZeroLink proposal to understand more.

## **G. Scaling Bitcoin: The Lightning Network**

As transaction on the Bitcoin network began slowing down due to transaction congestion as there was more demand for transaction throughput, users became unsatisfied with the speed of the transactions. When many users attempt to transact on-chain, it takes a bit of time for miners to process all blocks before some transactions can be processed also. It is often the transactions with higher priority or larger size that cannot fit into one block due to limited space. Multiple proposals were created, that we already touched upon before in the Bitcoin Nodes section within this chapter, that resulted in a long civil war within the space in 2017.

The Lightning Network is a recent Layer 2 invention that utilizes bi-directional payment channels to allow users to route payments. This makes it possible to send almost instant payments to other users. It was created as a solution for solving the very difficult task of scaling bitcoin, because blockchain systems are nearly impossible to scale. in order to

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<sup>37</sup> Anonymity set is a debated term due to their wording and usage of the term, which is supposed to refer to the strength of anonymity given for one unspent bitcoin transaction within a UTXO that went through a coinjoin like in Wasabi, Whirlpool or JoinMarket. Samurai Wallet developers argue that there is no central anonymity set possible to determine since every coinjoin is different in shape and size to draw parallels or standards. (nopara73 and TDevD, ZeroLink: The Bitcoin Fungibility Framework)

send payments, users must allocate channels to others that allow them to make transactions via routing, and payments can go from point A to B through a network of participating lightning nodes without the coins ever being exposed to the possibility of theft or loss. Lightning Nodes that route payments can collect fees for making the transaction of a payment possible. (Antonopoulos)

The term “#Reckless” was created, because as the network started operating people began to use it actively, although the Lightning Network is far from being finished or without critical bugs. Although stable and operational, it can already handle transactions. The Lightning Trust Chain (#LNTrustChain)<sup>38</sup> was started by a pseudonymous Twitter user Hodlonaut who started passing around amounts of bitcoin to users who then passed it onto another, increasing their total amount over time. The point of the Lightning Trust Chain was to promote the use of the Lightning Network and show that it is functional and can handle transactions to places all over the world. The torch took 292 hops reaching the total amount limit of 4.29m satoshis, and as the last hop, it was symbolically donated to @btcven, a charity organization helping people in hyperinflation as it struck Venezuela.

The success of the LN trust chain has shown that the system is already functional, and it can just as easily go peer to peer between users as on-chain bitcoins, with virtually no fees right now. Although in the future fees might increase as the lightning network sees adoption increasing. Today there are a total of 4560 Lightning Nodes with over 30628 channels open. (Acinq)

Since now we can see that Bitcoin is protected by a line of robust technical backing, we must take a look at its underlying social layer that further enhances its protective capabilities. Only by that we will have the full picture of what is happening, because it is not a lone technology that enables these processes and accelerates them. Bitcoin alone is clearly incapable of protecting itself against all forms of attacks. The next chapter will explain the social organizations that are built around Bitcoin and actively advocate for its usage, adoption and education in the space while attempt at the same time to protect the network against most forms of social engineering attacks targeting it.

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<sup>38</sup> The Author of this Thesis was the 25<sup>th</sup> participating member of the #LNTrustChain.

#### **IV. The Social Layer of the Bitcoin Ecosystem**

One of the most important aspects of Bitcoin is the social organizational aspect of it. Bitcoin in this sense is unique, because no monetary tool has ever enjoyed the protective care of its users more than this programmed tool has. The diverse creed of people that gather behind the digital currency is immense. For human beings to unite under the flag of one monetary standard that cannot be censored is unique. This organizational ability has shown us that Bitcoin relies not only on miners to protect the network and on nodes to keep the ledger of the Bitcoin blockchain secure, but also on the protection of those who use it, who hold value inside units of bitcoin. These individuals are the guardians of the network because Bitcoin rewards them with immense freedoms and liberation from forms of oppression. Those who value these granted freedoms are steadfast to offer their time and skill to continue advancing forward Bitcoin. On the basis of voluntary association, even developers give their free time as service to the community by developing Bitcoin, continuing to provide it with ideas and improvements to make the protocol more stable, safe, and secure to interact with. Some individuals go as far as to sacrifice their own personal safety and financial wellbeing just to help Bitcoin bring about its promise of total liberation.

In some countries, the usage of Bitcoin can be an extremely dangerous activity, especially where social liberties, protections and public safety is not present. It is common that interaction with the Bitcoin protocol can bring about the dangers of physical harm and even the possibility of death. A bitcoin developer called Jameson Lopp was swatted<sup>39</sup> once due to his affiliation with and professional opinion on the development of Bitcoin, namely, his home was raided by armed police. Other holders of bitcoin were abducted in Ukraine to extract their bitcoin holdings by force, and later ransom was apparently paid to his kidnappers for his safe passage. (Polityuk) As more humans observe value behind units of bitcoins, the chances of crime increase exponentially. Since usage of Credit Cards lowered crimes originally due to no physical cash was anymore necessary to access funds with the presence of credit, physical crime targeting physical cash has decreased, but instead cybercrime has proliferated. Bitcoin in this sense is unique because it can raise back physical crime targeting users of bitcoin. Since Bitcoin is permissionless and transactions on the bitcoin blockchain generally cannot, after 1-3 confirmations, be reversed, therefore this

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<sup>39</sup> Is the act of hoax calling the police and claiming that a serious incident is happening that will eventually result in armed police storming the premises.

effect does not bring about the same protections as credit cards do, for bitcoins cannot be refunded in the case of theft. As Nation States will soon also begin to feel threatened by the liberational powers of Bitcoin, chances are higher that they will resort to physical violence to exert control over the dissenting population. As explained in *The Sovereign Individual*, even in western democracies, where the freedoms and security for individuals are given within a constitution, the chances of such actions can be expected as those in power become desperate to hold onto it.

The organizational capabilities of Bitcoiners are there in part to protect collectively, in a decentralized way, against such forms of attacks as members of the community develop protective tactics against such forms of potential attacks by not just state actors.

Individuals seek to remove control out of the hands of government and to educate others and organize. Ideologies were formed to create parallel societies<sup>40</sup> and organizations that seek to educate others and make the usage of Bitcoin proliferate within communities. The importance of educating users is also emerging as most non-users are very overwhelmed with the user experience provided by Bitcoin. As improvements are made on the user experience (UX) side of Bitcoin, the better the onboarding capabilities slowly become, therefore making it easier to access functions of it over time. These user experience improvements can be anything ranging from making transactions or making backups of our private key.

Since the actions of individuals seem to be motivated by some aspects of freedom, we must investigate these and see how these affect the users of Bitcoin, how these people function within the community and how these community organizations offer a protective net for the Bitcoin ecosystem. In the following sections we are going to examine these effects.

But before we proceed, there is one problem we need to face. Due to the nature of this space, its organization and the participating individuals, data is very scarce. Scientific research is already targeting these individuals to better understand how this space functions, how it forms connections. (Maddox, Singh and Horst) Therefore, our research methodology changes at this point in this chapter. We are going to heavily rely on empirical research based on observations and experiences. **Interviews will be conducted, and places will be visited**

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<sup>40</sup> Two examples of these parallel societies can be found in Europe, one in Prague, Czechia called Paralelní Polis and the other in Bratislava, Slovakia called Paralelná Polis. Both communities call themselves cryptoanarchist and actively utilize Bitcoin as the primary form of unit of account and medium of exchange.

**to informally collect information. Further data will be collected by direct observations of interaction of users in the online space.** Since most **Bitcoiners are very privacy conscious individuals**, they often use pseudonyms or anonymous names they identify on social networks or in the real world to protect their identity against governments and third-party interests. We are going to respect these individuals and not interfere with their privacy, most names used as references are their respective Twitter handles or names they allow for usage.

### **A. Protecting Bitcoin through Social Organization**

The Social Network, Twitter, is the main congregation of socially engaged, active bitcoin users. For those Bitcoiners who are regularly active, Twitter slowly became the norm to use that serves as an instant messaging service that can communicate short messages publicly like a micro-blogging site that allows the immediate publishing of information online. When these messages are posted, connected users can like or share them by re-tweeting these messages. Twitter has come to the forefront in interaction for Bitcoiners because of the instantaneous ability to immediately share messages and valuable information. Developers, users, miners, speculators, entrepreneurs, and others can immediately reach each other on the platform and engage in discourse. This is a very handy tool for Bitcoiners because it serves them also as a debate platform. There is a lack of hierarchy among Bitcoiners due to this instant accessibility of certain users. Whether it be Bitcoiners who started working on bitcoin software in 2009 or those who acquired enormous amounts of coins before the speculative events started, anyone can reach each other. This is an incredibly special aspect of the Bitcoin ecosystem, because anyone can interact with anyone. There are no inhibitions between users, no social status or rank matters. A new user who wishes to get started with acquiring bitcoin and who seeks information about its storage, can immediately converse with veteran users who are very willing to help others out with issues. Developers and programmers who are working on software are also very engageable, users who need help setting up node installations can rely on the community for help. Although, when someone wishes to set up something complex solution like a Bitcoin<sup>41</sup> full node, manuals are

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<sup>41</sup> Bitcoin is the Bitcoin protocol implementation for remote procedure call (RPC), it functions as part of Bitcoin full nodes. There are other alternatives also like Libbitcoin and BitcoinJS the latter which runs on node.js programming framework.

available. However, if that is overwhelming for users, they can also rely on the helping hand of other users and developers who are very engaging in assisting other users with such problems. Although due to the possibility of legal ramifications, users are often wary of providing investment advice to others. This does not stop Bitcoin users from recommending others to try out Bitcoin by acquiring some, either by exchanging, mining, or earning them. Some users provide large databases of knowledge materials online<sup>42</sup> with their respective links for newcomers that allow better education and risk assessment for individuals.

Nevertheless, Twitter was not the first place where discussions started happening about Bitcoin. The first discussions were held on the Cypherpunk Mailing List and only later migrated to the BitcoinTalk.org forums, since the Cypherpunk Mailing List is no longer around main discourse concentrated on the Forums. Even today, with over 2.7m registered users there are active discussions ongoing on the site about Bitcoin and other alternative copies of Bitcoin. Satoshi Nakamoto used BitcoinTalk forums to engage interested users who wanted to try out his software. Development discussions are also ongoing even today on these boards where users review or debate certain proposed changes or ideas. Although as the website allowed others to post alternative ideas, the space quickly diluted with those who are not especially interested in Bitcoin.

On Reddit, the r/Bitcoin board has over 1.2m subscribers and is similar in contents to those of the BitcoinTalk forums, yet, here all the threads are within one board as per given feature of how Reddit structures posts. Posts can be up and down voted to give them more visibility.

Based on observations, Twitter is, in sense of engagement and information transmission, is much more relevant in the bitcoin space, while the the BitcoinTalk forums and r/Bitcoin on Reddit are slowly becoming less important even as more users are attracted to the other platforms. Twitter's underlying matching and curating algorithm is partly responsible for this ability to connect better, since connected users on the platform will see content displayed from those who they follow and those people's interaction with other users, therefore engagement can be better created and is faster among users. Localized communities can have hashtags and other messages trending, as users retweet messages, they get displayed also on their page that creates further extended reach for content and communication. Due to the engagement forms within this given segment of Twitter and

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<sup>42</sup> One of this list of resources is maintained by Jameson Lopp at [www.lope.net](http://www.lope.net)

because of their connectivity, Bitcoiners began calling this part of their social-media space as Bitcoin Twitter.

It is not by chance that socially active Bitcoiners congregate on Twitter, for it provides them with a special ability to protect the social layer of the entire Bitcoin ecosystem. These are important matters, because they give protection to individual Bitcoiners and also provide protections against third-party social engineering attacks that target the Bitcoin Protocol itself. But Bitcoiners do not fully rely on one communication medium. Twitter is obviously not immune to cyberattacks, communication on its platform could be censored or manipulated. Although, disruption in its service would not interrupt individual Bitcoiner's ability to organize. Outside communication tools can also be used and since Bitcoiners actively network with each other they maintain their own personal space with those they trust. Some socially active members of the space are also competent at bypassing attempts of censorship to establish secure encrypted communication with other users. Satellites operated by Blockstream can circumvent censorship and can allow communication to continue.

Bitcoiners are notoriously decentralized, unevenly spread out across the globe, and they are in a sense aligned in political ideology. Although this alignment among Bitcoiners does not shy them away from debates. The community constantly creates debates among its own participating members that can often appear aggressive or toxic<sup>43</sup>. But since Bitcoiners share fundamental basic ideologies (that basically unite them even within disunion), it allows them to actively organize and come to compromises.

i. *“There’s Bitcoin, and then there’s Shitcoin.”*

Since the spread of alternative copies of Bitcoin started, curiosity led some people to give them a try, since many of those copies have portrayed themselves as a viable alternative that is better and more “superior” compared to Bitcoin. As most of these coins slowly turned out to be a scam or a pump and dump scheme that only attracted investor funds that later stole funds via an exit scam, Bitcoiners slowly began calling these alternative coins as “shitcoins”. This effect went as far as in 2019, Republican U.S. Congressman Warren Davidson on a

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<sup>43</sup> Toxic here means that a user of Bitcoin can be unwilling or unaccepting towards other ideas or intolerant towards ideologies of other users or their behavior. These behaviors can range from casino like gambling with alternative currencies or other behaviors that seem to suggest ideology-based changes to bitcoin, we will examine this within Bitcoin Maximalism section within this chapter later.

hearing related to Facebook's digital currency project, called Libra, included the term: "*There's Bitcoin, and then there's shitcoin.*" With that, Warren essentially questioned the quality and feasibility of alternative coins, similarly like how Bitcoiners refer to them with the term.

As shitcoins began to spread, Bitcoiners began calling out these projects and their developers actively. These activities are essentially messages targeting users of shitcoins about the dangers of investing into these currencies. The 2017 ICO (initial coin offering) craze created many pump and dump tokens and scams that created multi-billion dollar losses for unaware investors. Investors who purchased Bitconnect (BCC) tokens saw their investment evaporate as a Texas State Securities Board ordered Bitconnect's to cease and desist, since Bitconnect was a multi-level-marketing pyramid scheme.

Since the belief spread that anyone can create his own better copy of Bitcoin, over 10000 copies were made so far that proposed to change functions of it or serve other purposes with its "blockchain" technology. Since the sheer existence of these coins is based on the underlying factor of human greed, their efficacy and future survival is questionable. The book written by Melania Swan titled "*Blockchain: Blueprint for a new Economy*" fully describes all "potential" applicable fields of "blockchain" technology, portraying them all as viable solutions that might come about and change the world. At this point, we must ask the question: If we are going to have a cryptocurrency that everyone is portraying as a viable solution to replace Bitcoin, then what is it that prevents others from creating a new alternative that also replaces that replacement?

The answer here is that, **this is impossible**. Those who claim otherwise are outright frauds (or are ignorant) who seek to develop or sell such form of solutions that seek to- or will eventually cause economic damage to others.

The way we can prove the single currency statement as a fact is this way: If we have multiple competing currencies, it is impossible in a long term to uphold their efficacy within competition because one will eventually become far more superior, and if we can keep on inventing new technologies then the invested amount of fiat value will evaporate by that causing massive losses for investors and users. If this is a possibility, then every cryptocurrency is a Ponzi scheme because when a new currency comes with a better solution, then only those will be able to profit who exit first into the new currency when the other is about to collapse, with that destroying the investment of other investors.

The existence of shitcoins is basically a **form of attack against Bitcoin**. Shitcoins are actively seeking to syphon stored value out of bitcoin in order to prop up the price of

their coins. Often these coins have pre-mined amounts allocated to users or sold via an Initial Coin Offering, those participating in an ICO often exchange bitcoins in return for other coins. Later these bitcoins are sold by the creators of these shitcoins and used for personal purposes.

This problem of shitcoinery is an actively targeted area of Bitcoiners to further educate users and show them that there's nothing else behind these coins other than scams and frauds who only seek to get rich quick. But because there is very little understanding how value functions and many people only want to make money by trading them, this is a never-ending battle.

Nevertheless, many academics in the Information Technology field claim that alternative currencies have efficacy and since some of the top trading shitcoins have unique technologies behind them that, as they claim, make them viable in comparison to Bitcoin. (Seres) Notably, it is a belief among them that "Bitcoin is the MySpace of the cryptocurrency space." (Seres) with that implying its impending doom, that it will be pushed out of "competition". But the underlying problem with their misunderstanding is the instilled understanding of competition that enables this form of thinking. Since those who are researching alternative technologies think that they can create new innovative solutions that can compete against other products, in this case create the new "better" Bitcoin. It is not possible to replicate the social organization, economic capacity, trust and security of the Bitcoin Protocol in any form.

The fact that there have been no major 51% mining attack<sup>44</sup> against other shitcoins, for longer periods of time, is just a temporary situation that might evolve in the future as Bitcoin's mining increase and more people will be looking for ways to obtain scarce bitcoins.

This formality of rejecting shitcoins has created a new term within the Bitcoin space, called as Bitcoin Maximalism. This term basically refers to the fact that there are users who avoid all forms of alternative currencies since they do not believe in their capabilities to function properly or to maintain value over a long period of time. Similarly, the term of Toxic Bitcoin Maximalism was created to include those who are completely rejecting all forms of shitcoinery. In the next section we are going to explore this topic further.

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<sup>44</sup> A 51% mining attack is when someone owns 51% of the total Hashing power of Bitcoin and uses that to mint coins or to alter transactions.

## ii. Bitcoin Maximalism<sup>45</sup>

The underlying aspects of Bitcoin Maximalism are actually important elements of this organizational capacity that Bitcoin grants for Bitcoiners. The distinction that we can make here between simple users and socially engaged users (Bitcoiners) corresponds to the capacity to go to lengths about educating others about the actual capacities and features of Bitcoin and its ecosystem. This is a form of moral consciousness of users to guide others towards adoption and usage of Bitcoin and heeding of others from alternative solutions that proclaim to be better than Bitcoin. One alternative form of it is Toxic Maximalism the proponents of which are very vocal about their views of Bitcoin, similarly like that of Maximalists, although their discourses with users are not usually constructive due to their educational conversation abilities often resembling that of internet trolls. Derogatory terms and memes are often used by them to communicate their disagreements with others, even among themselves within their own circles.

Bitcoiner's educational activities often involve telling other non-Bitcoin users that they are going to lose their money, or that they are investing into scams that only serve the interests of its creators. The issue of constant theft and scams prompted the community to evolve a rejecting stance towards those who promote such alternative currencies. The sheer size of generated communication posted onto a Telegram Channel called as "Rekt Plebs"<sup>46</sup> puts on display these losses and questionable activities of other users. Although, the Rekt Plebs group is not especially consisting of Bitcoiners, the main point of the group at this point is to promote the dangers of speculation. The group's activity seems to promote a sense of understanding of what is the actual result, most of the time, of reckless investing. Since most of the time, investment into alternative solutions (that promote themselves as better alternatives of Bitcoin) result in major loss of investment. Communities built around other solutions either do not have enough users and mostly consist of developers or they are filled with fake accounts (like bots) to make the group seem more popular or populated. These deceptive activities can usually be observed on solutions that especially exist only to scam users into believing that these are working products.

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<sup>45</sup> The term Bitcoin Maximalism originates from Vitalik B. who used the term to derogatorily refer to toxic users of Bitcoin. Later Bitcoiners adopted the term and turned it into an integral part of the community vocabulary. For more terms adopted by Bitcoiners, for a limited list see Appendix 1 in the end of this Thesis.

<sup>46</sup> It is possible to access the group on the popular communication application Telegram by following this link: [t.me/rektplebs](https://t.me/rektplebs)

The actions of users during the first Bitcoin Civil War (Block Digest), that ended with the activation of the User Activated Soft Fork (UASF) during the block size increase proposal, can be partially labelled as a form of maximalist behavior norm that seeks to protect the network. As explained in a previous chapter under the section called “Bitcoin Node”, the collective actions of users (who had full nodes running) were able to prevent others from enacting changes on core functions of Bitcoin. Since the proposed changes were that of the interest of larger interest groups that had financial aspirations, they attempted to push through changes that would have changed Bitcoin’s core features. These feature changes would have put these actors into a superior competitive position compared to others if these changes had succeeded.

Without active users within the space, it would have been impossible to protect Bitcoin against it.

Maximalism might not be a term that everyone is actively associating with, but the interest to protect Bitcoin completely falls within aspects of forms of Bitcoin Maximalism. User’s individual interest in Bitcoin’s success essentially prompts them to protect and ensure Bitcoin’s uninterrupted operation. This is unique because no government backs Bitcoin, it is a software run by other individuals that form a network that communicates with other elements of the protocol through the internet. It is entirely unique that this software enables this form of social organization, both in the real world and on the internet.

### iii. Pseudonymous Bitcoiners

The social space of Bitcoiners is remarkably interesting because of a prominent level of privacy extremism<sup>47</sup> that is present within it. Many people who interact online often use pseudonyms or anonymous names that seek to protect their privacy and personal safety. To better understand these individuals and their capabilities, we should take a quick look at some of these differences between anonymous and pseudonymous Bitcoiners.

Anonymous online users often do not wish to involve their real identity online at all, they protect it by using borrowed or invented names. Anonymous individuals often can change names or keep to one to be recognizable within a given social network. These individuals often attempt to avoid outside communication with individuals and avoid

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<sup>47</sup> Privacy extremism refers to the usage of privacy protecting or enhancing tools or software to protect one’s real world identity either online or in real life.

socializing in the real world with others with similar interest, except if proper protections can be achieved to conduct these interactions.

Pseudonymity is not much different, people chose invented names that they then keep for themselves as a form of personal identity in the online space or outside of it. Pseudonymous individuals often seek connection with other users within online space or even outside, like in conferences or meetups. One feature of pseudonymity is that it can end in the outside world or continue without impeding on abilities. The necessity to protect the person's recognizable features is no longer required if the individual is within a space that ultimately shares interest across all individual participants.

The difference that we can see here is that anonymous users will often decline to participate in groups that share closer associations among members. They are more reluctant to open about their persons and with that limit connectivity to just the primary interests and activities of their online presence. If anonymous users reveal information about themselves, then the quality of their anonymity degrades permanently. If an anonymous user would be targeted, the protecting capabilities of the network would be less effective on these individuals because little is known about them. Since this form of identity protection comes with the greatest maintenance costs, it can provide privacy and security, if it is properly maintained<sup>48</sup> by those who are anonymous. If an anonymous user's identity is compromised, there is no way back, the person must either abandon it and change to a new one or stay potentially compromised.

Pseudonymity on the other hand behaves differently in this situation and can be much more flexible. Pseudonymous users do not experience social interaction limitations like that of anonymous users, each individual decides about her level of personal trust that allows these connections to form. Recognizability is much higher and the network effect provides unhindered protective effects of collective actions. When an individual is compromised, the perceived negative effects of it is less severe, therefore it is not necessary to abandon pseudonymous personas. Since here a pseudonym only attempts to protect against the initial general knowledge of one's identity and not the total protection of it, the effects are perceived not as severe. A pseudonymous person might be known by others personally or in private life, therefore it can also relay this ability of identity protection onto others, which is not

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<sup>48</sup> Good online privacy, the usage of virtual private networks (VPNs) and proxies and the Tor network's anonymity layer can all help maintain proper privacy hygiene. Although most services other than Tor comes at a cost if we wish to protect our privacy.

necessarily a burden. Although, from that point on we must rely on the other person's ability to protect our identity. Anonymous individuals can not establish such intimate levels of trust formations with others in comparison to those pseudonymous.

Pseudonymity is not necessarily a counterbalance against state sponsored surveillance, since governments can use investigating tools or cyber warfare tools to find out the identity of certain users. Although the usage of VPNs and that of Tor is certainly just as popular, pseudonymity only protects against other individuals and serves as a practical insurance against posed threat by others on one's privacy and personal safety.

Pseudonymity is also an excellent tool to remove all inhibitions that might impede on effective information sharing among individuals. Information sharing essentially becomes free of inhibition, lacks control and all forms of accepted norms. Some might argue this can create rampant intolerance, racism, and extremism, which might be correct because these individuals do not have to abide by the accepted norms. But on the contrary, these individuals are much more efficient at communicating ideas, forming connections and organizing. Most socially engaged Bitcoiners also do not wish to abide by already existing social norms because they perceive them as part of the given problem that either enabled or was created by elements of high-time preference.

Individuals who do not display their real-life pictures and hide behind masks are often more inclined to tell the truth, while they are also more inclined to troll others online for their perceived negative actions. Pseudonymous users are also less inclined to brag online about their fame or use their achieved online status as a tool to negatively influence others, rather on the contrary. Countless conversations can be found both on Reddit and Twitter in which pseudonymous Bitcoiners are educating other users about Bitcoin, its safe usage, and its features.

We can therefore establish the fact that pseudonymity is a useful tool that Bitcoiners utilize to enhance the safety of their general online presence and, by being able to associate much closely within the online space, they form much stronger connections than regular named users. In the next section we are going to look at a much distinct form of Fukuyaman trust formation and individual association that is related to this section, because a large majority of its participants are almost all uniquely pseudonymous.

#### iv. The Bitcoin Plebs

Online spaces for Bitcoiners discussing their views and opinions about Bitcoin are usually public spaces where everyone can view their opinions and ideas. It was a common trend among Bitcoiners that alignment alongside their original goals of Bitcoin adoption, usage and promotion had no other social association-like formations (other than real world Bitcoin meetups). On Twitter, users can send private messages, but those are also reliant on Twitter's Terms of Service and Privacy Policy and they are not overall convenient. If an account would get terminated, a user then loses the ability to communicate with others. Some users also began using alternative applications to make communication possible if a service would be unavailable, some of these were like Telegram, Keybase and Signal. As Bitcoiners slowly formed more closer ties with each other, direct reach to each other has slowly become a necessity, as well as availability to receive messages from anyone. But not all users are so enthusiastic because some claim that those services are centralized and usually can compromise the IP address of a user. Especially voice communication applications are not often used by those wanting to protect their personal privacy.

The Bitcoin Plebs is one of the most notable case of a small Bitcoiner group that seeks to bring others closer together into a more focused environment where they can talk, exchange ideas, debate each other or organize within the greater community. This group was the byproduct of a response to an attack that outside actors perpetrated against a fellow pseudonymous Bitcoiner.

On the 11<sup>th</sup> of April 2019, a pseudonymous Bitcoiner, called Hodlonaut, has deleted his social media accounts without leaving a reason. Bitcoiners within the space immediately began speculating about what had happened because earlier Hodlonaut deleted his Telegram and Discord accounts and was already unreachable on those platforms. Soon after a news publication was posted online by a media outlet owned by Calvin Ayre. In that post it was described that the owner of the outlet had placed about 5000 dollars' worth of Bitcoin SV (BSV is a forked copy of Bitcoin Cash, which is also a copy of Bitcoin) onto the head of Holdonaut, in order to have his real-life identity compromised. Hodlonaut previously had been a vocal critique of Craig Steven Wright<sup>49</sup>, who claimed to be Satoshi Nakamoto himself. Craig Wright previously asked his business partner Calvin Ayre to de-anonymize the pseudonymous Bitcoiner to be able to sue him in UK Courts.

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<sup>49</sup> Bitcoin users refer to Craig S. Wright as Faketoshi because his claims that he is Satoshi Nakamoto are unsubstantiated and unproven.

As information quickly spread about the news online, outrage has spread across Bitcoin Twitter. Everyone was outraged about the attempted attack against a fellow Bitcoiner and waves of angry posts were made targeting Calvin Ayre and other BSVers who were associated with Craig Wright or Calvin Ayre.

Users soon have begun using hashtags on Twitter like “#WeAreAllHodlonaut” and “#CraigWrightIsAFraud” to voice their support and sympathy towards Hodlonaut. Bitcoiners and businesses, that are building onto the Bitcoin ecosystem, (like that of Media Outlets, Commercial Businesses, etc) have changed their avatars to that of Hodlonaut. Hodlonaut’s avatar is that of a cartoon astronaut space cat with different Bitcoin-oriented motives on its uniform that symbolize previous important milestones<sup>50</sup> within the Bitcoin community’s life.

Users all over Bitcoin Twitter were outraged and by changing their avatars they began signaling to Hodlonaut’s attackers’ in a comparable way like that in the Spartacus movie where everyone who were captured by the enemy stood up alongside Spartacus to say that they are also Spartacus to confuse the enemy. They have also started a fundraising to support Hodlonaut’s legal defense, a bitcoin donation site was set up where users amassed over 2 BTC (at that time over \$20.000 US dollars) to provide legal counselling for the pseudonymous Bitcoiner. These events lasted for about 2 months until the eventual return of Hodlonaut onto Twitter.

As a response, Bitcoiners began organizing on Twitter within group direct messages that quickly outgrew its upper 50 user limit and they had to move onto the popular chat service, called Telegram, where they opened a group called as the “BitcoinPlebs”. The original creator’s goal was to organize and provide direct communication connections and a place for everyone to discuss anything. As of today, the group still operates as an open group that anyone can join, whether one be a Bitcoiner or someone who wishes to learn more about it.

Early members began claiming certain morals as group authority that they took as a personal trait of those participating in the Bitcoin Plebs group. Some of these were the following: The avoidance of influencers on Twitter, those who try to influence individuals about acceptable actions or other activities related to buying Bitcoin. They claimed these

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<sup>50</sup> Like the User Activated Soft Fork (UASF) often portrayed as the US Air Force’s insignia, intended as a pun to portray superiority of their action and the #NO2X acronym that was used in tweets by those who opposed the 2MB block size upgrade.

individuals often sell (or the word used by them “shill”) third-party products or mandatory KYC exchange services. They proclaimed to be the “plebs” enjoying total equality among members, independent of social status or amounts of bitcoins owned, because they are middle- or low-class to that of elite Bitcoiners who have been in the space and have larger amounts of bitcoins. They also proclaimed to be free of selling or promoting products that do not adhere to the norms of Bitcoin Maximalism. They also aim to be ideologically pure through their participation and skin in the game, both active investment in Bitcoin and through long term “hodling” of bitcoins. (Taleb, Skin in the Game)

Most of the users within the Bitcoin Plebs group can be classified as a Toxic Bitcoin Maximalist.

Bitcoiners often face problems related to trust, because not everyone can be fully trusted, and opposing political views or arguments about how Bitcoin should go ahead often serve as something that violates these forms of trust between individuals. These trust related challenges can happen daily among Bitcoiners, but it is an important aspect of social capital building, because it allows individual participants to see who they can trust and whom they can enter voluntary associations with.

The Bitcoin Plebs is more like that of a fraternity organization in this sense because trust is constantly enforced through the common morals of the group. This allows users to associate more easily and later to enter further associations with others as they explore the boundaries of their relations.

The group previously had splinter organization forming due to disagreements between certain Bitcoiners (or “plebs”) who seek to enforce different rules or moral authority. The group called Taco Carnivore Bitcoin Plebs was formed, being much more hostile towards those who did not adhere to the unwritten code of Toxic Bitcoin Maximalism. Although no massive negative impact was created because of the formation of the splinter group, some members still visit both group chats on Telegram.

Both groups are very casual, every day topics are shared in their group. Both groups are still available on Telegram and can be publicly accessed.<sup>51</sup>

The main important lesson this organization capability shows us is that Bitcoiners have reached a higher level of understanding of necessity about voluntary association. Since individual users alone would not be capable against threats, now as part of a group can be more powerful. As the space slowly evolves, connections form and trust build up among

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<sup>51</sup> Links to these groups can be found in Appendix 1.

users, active association slowly seems to become a necessity. It is apparent that users who band together have a higher total effect within the community against aggressive forms of attacks that target the social layer of the Bitcoin ecosystem. It is only a matter of speculation now how powerful these forms of associations can become in the future as they slowly reach out into the real world where potentially these individuals will later form real life friendships, partnerships or business ventures. It is also now probable that as the value of Bitcoin rises, this will grant more abilities for these individuals, expanding their line of arsenal to provide active protection for members of the greater community and for Bitcoin. (Fukuyama)

The existence of Social Capital has played a key role in enabling this ability of voluntary association. As Bitcoin's online space of users keeps expanding, the social formations among users also develop. Francis Fukuyama's book called "*Trust: The Social Virtues and The Creation of Prosperity*" clearly explains some of these expected ways of trust formation among human beings, and we can make a clear correlation between these activities and those among the Bitcoin users. In his book, Francis Fukuyama pointed at the Internet's capability to start processes towards decentralization and limitation of governments through society's expanding abilities to control its own freedoms. He referenced Friedrich A. Hayek, claiming that these processes will eventually lead to the liberalization of markets, their restructuring and new formations of social structure among members of society as technology keeps advancing. Social capital allows individuals to network and establish relationships with one another to promote economic growth and enable socio-political organizational abilities. (Fukuyama)

Without the presence of social capital, no form of cooperation and associations would be possible within the Bitcoin space among users. Based on already existing evidence, we can carefully conclude that this effect seems to **derive from the inherent ability of Bitcoin to lower time preference**<sup>52</sup> which, as an effect, **enables spontaneous sociability**<sup>53</sup>. (Fukuyama)

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<sup>52</sup> This can be attributed to Bitcoin's ability to re-introduce savings and normalize them, with that prompting individuals to delay gratification and think in long term goals. (Ammous)

<sup>53</sup> For more information about spontaneous sociability, please refer to Francis Fukuyama's "*Trust: The Social Virtues and The Creation of Prosperity*" pp. 26-29.

## v. Bitcoin as Socio-Political Basis for Cooperation

As today's world is ever increasingly becoming polarized along social and political lines, damage can be easily observed in the world in relation to it. The processes described in the introductory chapter of this thesis titled "*The Great Chasm of Political Polarization*" clearly shows us a degrading world view that is rife with corruption and hard-liner political interests. Since the effects of Monetary Nationalism deeply affects political organization, it also affects social connections between individuals through it. This is apparent in our world today because of constant political polarization and isolationism of individuals who do not conform to certain political standards of society. This form of rejectionism of alternatives which was instilled in society through the last century, that politicians used to enforce bias through society to keep certain political interests within power. Either by using the Media or other forms of communication tools to keep individuals locked in deep in their own political sphere and conditioning them towards the total rejection of other ideologies. Since politicians are the greatest rent-seekers within society, those who get into government essentially enforce that upon others. This has directly led to Monetary Nationalism becoming a standard that nobody can change because then countries lose their competitive edge. (Ammous)

But based on observations, Bitcoin can bridge this problem for us, because it removes inhibitions towards individual free thought. Since Bitcoin also enables social capital, users began looking for allies for their cause, which in effect lead to seeking of common grounds based on shared beliefs within a new open monetary standard. This effect did not lead to differences in political ideology being accepted by others, but it has effectively created a bridge between opposing political ideologies that allowed them to communicate and organize towards a common goal that Bitcoin proposes. (Fukuyama)

This common ground of cooperation was found within the fundamental basics of libertarian socio-political thought. The protections of liberty, individual financial freedoms, the free market, and personal privacy has become an especially important common factor.

This is an important effect because the protection of Bitcoin is a higher goal of all individuals. The freedoms that Bitcoin restores prompts others to cooperate more and tolerate other's views, as long as those do not seek to collectivize them or enforce political thoughts on them. Individuals within the space are not discriminated based upon their race, religious beliefs, ethnic origin, age, or sexual orientation. They instead judge them based on their actions, participation, and contribution to the space.

The violation of these beliefs and discrimination through other means are not very well tolerated by Bitcoiners.

The participation of users within the community space also strengthens individual connections and fortifies beliefs and potentially also moral standards. Since most Bitcoiners usually perceive that Bitcoin is constantly under attack at every given moment, a sense of vigilance became apparent which prompts for active organization. Previous events described in the “*Bitcoin Node*”; “*Bitcoin Maximalism*”; and “*The Bitcoin Plebs*” sections provided evidence for the deriving effects of these major conflicts<sup>54</sup> that happened within the Bitcoin ecosystem. These events are especially interesting because certain effects (like that of common experience of perseverance and success after a major battle) serve as a form of (not so virtual) front-line experience for Bitcoiners. This creates camaraderie, shared bonds of trust and cooperation among individuals. As Bitcoiners also meet each other in the real world, these connections grow even stronger over time. Some usual brandish Bitcoin related or themed clothing in the real world when attending Bitcoin conferences or meetups, which show that a separate cultural formation is also possibly present. It is also possible to find presence of music and art related to Bitcoin that further supports this claim.

As we can see, the social organization of the Bitcoin ecosystem is a very robust formation. It uses technology and social organization to protect it in situations which Bitcoin is not designed to protect itself in. The individuals also protect themselves against interference, they use technologies that protect and liberate them to ensure their uninterrupted participation. Individuals enter voluntary associations or if not, they form strong bonds among each other to be able to achieve that. Since Bitcoin is still a relatively recent technology, the liberating effects are only getting stronger right now. It is in the common interest of its users to protect it and to support Bitcoin in achieving its revolutionary potentials. Individuals will be able to liberate themselves and be able to change the world, permanently, only by that.

In the next chapter, we are going to conclude this Thesis and provide a full collection of findings and observations that support or invalidate claims or theories.

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<sup>54</sup> Like that of the UASF (User Activated Soft Fork), #NO2X block size increase and the #WeAreAllHodolonaut events all constitute as one.

## V. Conclusion

As I have embarked on this journey, the question of trust always lingered around like an unknown element that seems to hold the answer for the question of why people are using Bitcoin. Through my research and my travels around Europe in 2019, I have managed to gain insight into the hidden secrets of Bitcoin and Bitcoiners. The original goal of this thesis was to find out whether a link between trust and adoption exists or not, and half-way into the research, the conclusion about the question have formed.

It is a consensus and belief among users of Bitcoin that there is a trust factor at play, a type of loss of trust that somehow drives individuals towards risking their money by acquiring and holding bitcoins long term. Such a young technology has driven financially very conservative users to take part in high-risk speculative activities where they hold a digital currency like bitcoin long term. Although, their reasons about their decision varies to great extent.

Without reasonable doubt, it is not possible to prove whether there is a direct trust link in bitcoin adoption. The decentralized and widely spread nature of Bitcoin and its users make it extremely difficult to collect accurate data that reflect the given situation properly and making predictions based upon it is nearly impossible. It is a limitation of this thesis that we cannot fully shed light onto this question, but neither can we deny the actual role of declining rates of trust in adoption. Therefore, we can only carefully refer to the information we have right now, that adoption is continuously growing, and that there might be a strong link between the abuse of trust and bitcoin adoption.

Some users of Bitcoin argue that the contrary happens, that as more users are entering Bitcoin, their trust is globally challenged, and it lowers their ability to blindly trust others. The so called “Don’t Trust, Verify” term shows that users shouldn’t trust but instead actively verify the information themselves, which results in less initial trust and more inhibition unless the truth content of information can be determined. This gives rise to the re-assessment of present reality, because **the de facto world view is now challenged** by Bitcoin. As people embark onto the journey of learning more about Bitcoin, they gradually manage to find out how the financial system works and discover its present flaws. Since knowledge about the financial system and how money function is not especially a well-known subject within society, the discovery of the facts can shock those unaware. This creates an accelerated destruction of general trust that prompts people to attempt to verify the truth

content of information that is out there. The avenues of doing that is to read about these, speculate actively about their inner meaning and to exchange information with other Bitcoiners. This directly enables **the questioning of reality**. Since Bitcoin can form absolute forms of truth, it creates an imminent need to achieve this also in those spaces that can only return perspectival forms of reality.

Also based on the findings in the Edelman Barometer, support for a continuously declining trust cannot be established, because rates of trust can go higher as public opinion changes over time.

It is not possible to quantify or measure the adoption of Bitcoin, because of the nature and origin of its users. They are heavily decentralized, widespread globally and only a fraction of its users are online in cyberspace.

Although globally it is difficult, regionally we can measure the rate of adoption. This is although incomplete, because we will receive back information that does not cover most users and from region to region this can vary greatly. Most Bitcoin users are not interacting online, they often follow the news but do not engage in the public discourse for a wide range of reasons. Only later, once the space sees enlargement of its userbase, will targeted surveys become more relevant.

As to how this thesis has developed over time, the original hypothesis began evolving as added information was studied and more new information surfaced about Bitcoin, with that directly altering the course of the research and the contents of this Thesis.

This Thesis so far concluded with the following findings about Bitcoin and its effects ever since its inception:

- i. Bitcoin is a form of money
  - a. Because it holds value independent of governments, it cannot be inflated, the system is designed and has evolved to be able to defend itself. One bitcoin can be easily broken down into its smallest fraction of value and because of its digital nature can be transacted without the interference of a third party.
- ii. Bitcoin is a peaceful revolution
  - a. The decision made by society to change to an alternative financial system is in fact a peaceful revolution. It does not require the users of the new financial system to go out and protest, because the new system can take over and supersede the already present legacy financial systems with extraordinarily little physical input. The change of system would lead to fall of governments

and the total transformation of statehood with a transition towards service offering libertarian governmental structures.

- iii. Bitcoin generates organic culture in its initial stages of adoption
  - a. Due to its revolutionary nature, bitcoin in its initial stages uniquely generates anthropological evidence of its existence. It organically creates arts, music, culture, and social organization. No financial tool ever before created organic culture, it is unique in form and organization within human history. Previous monetary metals were just objects within culture and not aspects that initiated culture generation or transformation.
- iv. Bitcoin bridged the left and right political ideologies
  - a. Due to its apolitical nature, Bitcoin seems to have enlightened political opponents and created consensus among disagreeing sides on the political spectrum that have united both liberal and conservative users of Bitcoin. Their ideology is debated and reached through consensus and held on a newly formed libertarian basis. This basis allows the spectrums to cooperate and reach common goals that bitcoin have enabled for them. For example, the unrooting of political corruption, transformation of the monetary tool and the cessation of the central banking system.
- v. Bitcoin liberates the individual
  - a. Due to the censorship resistant nature of bitcoin, full financial freedom leads to a fulfilled free individual who is responsible for his own individual self. Because now an individual can transact without interference, the possibility of entrepreneurial spirit is now unleashed, with its full positive and negative consequences. These freedoms accelerate the need for the expansion of other freedoms within society, for example with the spread of 3D printed weapons, the freedom for self-defense and protection of one's private property. Since Bitcoin is a digital monetary tool, but with physical storage requirements, it is exceedingly important to physically protect against unwanted physical attacks, therefore the requirement to expand protections of private property is a direct consequence of it.
- vi. Bitcoin made possible the separation between state and currency
  - a. Because now it is no longer a government maintaining a monetary standard, but the social consensus of human beings through the added power of the free market, fiat money has become redundant and may become obsolete. The

separation between state and currency is now a reality, human beings who agree on a given value of a bitcoin can transact freely without the interference of a state entity or a non-state third party.

- vii. Bitcoin makes taxation difficult
  - a. Since the private keys and associated passwords cannot be taken away, taxation will be extremely difficult if human beings decide to refuse to pay taxes. Governments will have to incentivize taxation and operate it on a voluntary basis.
- viii. Hyperbitcoinization can potentially cause a hyperinflationary demonetization event
  - a. A sudden increase in the stock-to-flow ratio of bitcoin can lead to established markets moving assets into physically settled bitcoin derivatives that could result in a catastrophic collapse in their valuation and therefore an astronomical increase in the price of bitcoin. This sudden market movement would be done within seconds, not hours or days and bitcoin would begin to gradually lose its US Dollar perceived value as more human beings establish it as a much more valuable monetary unit.
- ix. Bitcoin lowers the time preference of human beings
  - a. Since human beings now able to re-evaluate their work's value production, they can observe that their produced value over time remains stable and they are able to afford more products in the future if they work harder for their goals. As human time preference lowers, immediate gratification of needs becomes less pressing and can be delayed to later obtain more superior services or products for the produced value. As more time is expended, more human produced value can be stored within Bitcoin, through which it can maintain its value permanently due to its non-inflationary<sup>55</sup> properties.

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<sup>55</sup> Bitcoin in its initial stages, rely on inflation to expand the money supply towards the goal of 21 million bitcoins. This is a process called as block rewards that miners receive for producing blocks through proof of work. As the block reward is halved roughly every four years, bitcoin will become deflationary for the time being until the price of bitcoin stabilizes. From that point on, Bitcoin can become a non-flationary currency void of inflation and deflation. As it will become ever increasingly easier to break down a bitcoin to the tiniest fraction of a unit, deflationary effects will not be possible to observe anymore. In theory, only catastrophic losses of coins will be able to cause massive deflationary value explosions, but as it becomes easier and much more secure to store bitcoins, the chances of such catastrophic human errors decrease over time. This

- b. It can also be argued that Bitcoin is an actual solution for high time preference that fiat currencies cause with their inherent inflationary abilities. As central banks often breach the trust of people, that, not to debase a currency, Bitcoin reinforces this statement and eliminates the possibility for an inflation after the block reward runs out. Since fiat currencies are so deeply woven into the cultural and organizational fabric of society, a high time preference environment is reinforced throughout its usage that penalizes those who attempt to function with a low time preference. Since, for example, savers would see their savings diminish over time because of inflation. Since a non-inflationary property re-introduces the incentives to savings, time preference lowers, and the negative effects of high time preference slowly dissipate.
- x. Bitcoin re-incentivizes the aspects of long-term savings
  - a. As money becomes a much more stable store of value, it becomes more important again for human beings to save money. As time preference lowers over time because of bitcoin, the demand for loans will decrease. As of today, there are little in savings available for the average citizen, especially in Hungary and the United States. But since fiat currencies are bad store of value due to their inflationary property, they lose value quickly over time and their purchasing power decreases. But since bitcoin does not lose value, it serve as a primary savings catalyst for the lower and middle classes.
- xi. Bitcoin will re-accelerate the rate of global technological innovation
  - a. As time preference lowers, a re-shuffle of shareholders will lower company time preference. This will cause shareholders to enforce their own time preference expectations on the operation of companies. This will immediately lead delayed gratification of profit seeking, which will lead to normalized production, improved research and development cost allocation. This will create better products in the future and allow a company to operate more self-sustainably. The problem raised by Jonathan Huebner will be resolved and global innovation will resume to gradually increase over time as new inventions are created again in search of the new. More focus will be also put onto the production of life saving medications and the research of anti-biotics

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is very apparent after the 2009-2011 period of exploratory usage of the Bitcoin protocol when its users were very reckless with the storage and handling of bitcoins. (Ammous)

as the new shareholders of pharmaceutical companies will enforce more society conscious principles and morals based on their own low time preference.

- xii. Bitcoin will halt climate change and potentially reverse it
  - a. Since climate change can be directly led back to the increase in human time preference, bitcoin is able to reduce the effects of consumerism and put an immediate end to human overconsumption and end-user produced greenhouse gas emissions. Food waste will be minimized as consumption will focus on savings and conscious spending of produced value. Less electronic waste will be produced since more efficient products will be demanded that do not break every year. Environmentally damaging production will be shut down, forcing the re-training and re-allocation of work force into different industries. More efficient, longer lasting, and environmentally friendlier technologies and products can become more profiting for companies as more consumers will be able to afford (and demand) those products over time as savings slowly become widespread again, with that more monetary capital is available by that time for their purchases in the future.
- xiii. Bitcoin will radically restructure society and the way we live
  - a. Since the separation between state and currency has become apparent, a complete transformation of society is now possible. As in the early days of Bitcoin's inception, a mass value transition happens from wealthy individuals towards those who early on caught onto the revolutionary aspects of Bitcoin. These individuals are in a sense incredibly lucky and wield extraordinary mental capacity towards changing the world for the better with the help of Bitcoin. As the new intelligentsia once again becomes the fore runner and messenger of the harbinger of change, it becomes ever apparent that these individuals will help reshape society as we know it. Since taxation will be difficult, governments will have to reform healthcare systems, the education systems, and services they provide for members of the public. Upon a change of system, these institutions might become disrupted for periods of time, but as part of any revolution that brings about a societal change are considered normal. As responsibility now shifts towards the individual, entrepreneurial spirit can be unleashed and a reacceleration in capital production can be

achieved. The social structure will also be re-shuffled because of the newly formed Bitcoin users who entered the space early in its inception. These individuals will be potentially at the forefront of this movement and play a key role at restructuring companies and forming new business with others from among their circles.

- xiv. Bitcoin forces governments to turn into service offering institutions
  - a. As governments become unable to provide free services, they must transition towards a for profit (or voluntary) entity that serves the population. These services will make it possible for citizens to choose their countries, either in countries where there are better living conditions, reduced tax burdens or better business and work opportunities. As claimed in the *Sovereign Individual*, citizens will become solely responsible for their own wellbeing as governments will no longer be able to provide enough social safety nets for their citizens.
- xv. Bitcoin limits down government's abilities in waging infinite warfare through the inflation of the money supply
  - a. Since Bitcoin makes taxation difficult, governments around the world will come across the issue of lack of funding for wars. Soldiers will no longer accept payments in fiat currencies. In order for a country to begin a war, it will be required to tax its citizens first, for without taxation a government will quickly run out of money and will be unable to fund its war operations, potentially collapsing itself in the process. Inflation will no longer be possible as a tool to fund potential wars by warring countries, and citizens will highly be likely to seek making war efforts impossible.
- xvi. Bitcoin's social layer defends the Bitcoin Protocol and its users against attacks
  - a. Social organization around the Bitcoin Protocol makes it extremely difficult for outside attackers to effectively engage the Bitcoin Protocol and its users. The prime examples of the UASF (User Activated Soft-Fork), #NO2X and the #WeAreAllHodlonaut events suggest that Bitcoiners have larger than average social capital. The UASF and #NO2X movements have shown that Bitcoiners can impede potential attacks against the Bitcoin Protocol that are questionable in nature and want to put other entities with self interest in more advantageous position. The problem was solved by using User Activated Soft-Forks on Bitcoin Full Nodes when node users demanded that miners

follow their lead else face that their produced blocks will get rejected and their expanded electricity will be wasted in the process. The #WeAreAllHodlonaut movement saw the more socially organized members of the Bitcoin community to organize in defense of its pseudonymous members who are in a difficult situation threatened by outside actors for their anti-scammer morals. The pseudonymous twitter user @Hodlonaut received legal threats and later doxing attempts by Calvin Ayre who put 5000 US Dollars in form of BSV to find out the identity of the pseudonymous user. This resulted in Hodlonaut deleting his social media accounts and going dark out of fear for his personal safety. The community response was overwhelming as outrage was observed over their actions and users began changing their avatars to Hodlonaut's space cat picture to symbolically defend the user similarly like in the film featuring Spartacus where enemies were looking for Spartacus but his kins stood up alongside to confuse the enemy about the true identity of Spartacus. In response to the legal threat, a donation drive was organized to engage the serial scammer and self-declared bitcoin creator Craig Steven Wright who is a business partner of Calvin Ayre. The donation drive received over 2 bitcoins (at that time over 20.000 US dollars). This action has shown that Bitcoiners know no limits to their social capital and even the most dormant observer users were prompted to take defensive action to protect their interests.

- xvii. Only one single version of Bitcoin can exist, no alternatives are feasible
  - a. Since the widespread usage of the internet only took about 27 years for reaching its current form to become an inseparable part of modern civilization, life in its current format would be impossible. Since bitcoin is a similar technology that operates on the internet, that requires users to upkeep the system, it can easily become just as inseparable part of civilization as the internet is today. A form of money that humans can use and agree universally on its price, that knows no national boundaries, gives limitless potential for global growth. Although some would argue that the technology can be improved upon and that it can be altered to create new forms of digital money, this is highly unlikely since human organization can only sustain one functional system that they universally agree on. The fact that the hash power of bitcoin reaches new all-time highs and alternative currencies barely reach

a tiny fraction of it, seems to show that there is small appetite for securing other competing blockchains. Bitcoin's initial start can no longer be reproduced, and competitors are immediately exposed to the potential danger of 51% double spend attacks. This factor shows that it is not feasible for human civilization to upkeep multiple different competing monetary systems similar to that of Bitcoin.

- xviii. Bitcoin will make it necessary to extend rights that make self-defense and the protection of private property possible
  - a. Since Bitcoin is a digital form of currency, it is especially difficult to protect it. Users must be in possession of their own private key to own and store bitcoins, and the protection of a private key against third-party inference is necessary. The spread of hardware wallets that can store the private key securely can isolate it against some forms of electronic attacks but not all, and the main problem that still stands is the physical protection of that secret. Electronic devices that are isolated from the internet can generate these secrets, they can be written down or stored on fire resistant materials that make them virtually indestructible, but they remain vulnerable to physical theft. The proliferation of 3D printed weapons and their easy access is a byproduct of self-defense and is intensified in its importance by making protection of private property possible for users of Bitcoin. This allows them to defend their wealth with the use of deadly force. Bitcoin is a permissionless sovereign money, it is not possible to revert finalized transactions, therefore it is vital to defend the secrets which allows us to access and manipulate stored value on the Bitcoin Blockchain. Since Bitcoin can be used to store any amount of dollars' worth of value on its network, potentially in the future, as the US Dollar value of bitcoins rise, physical attacks by governmental, non-governmental and individual actors will target those who possess bitcoins. Therefore, users of the Bitcoin Protocol will be more inclined to support the expansion or establishment of constitutional rights that allow individuals to possess and bear arms. If this is forbidden by a state and the given environment is deemed unsafe by those who use Bitcoin, they will be highly likely to relocate to other nations that permit the right to self-defense and protection of private property with the use of firearms.

We can also conclude the basic reasons of adoption among users. It can be easily approximated due to the public discourse within the bitcoin space on social media. We should differentiate between two groups existing within the ecosystem: speculative traders and long-term “hodlers”. The following can be observed:

1. Financial gains are a complete priority among most traders, but not a complete goal among holders.
  - a. It is observable that most of the Maximalists also prefer financial gains, but not always in the terms of fiat currencies but instead of gaining more bitcoins. Their rate although perceived to be small since most holders of bitcoin experienced losses when they began trading their coins speculatively. Although everyone still uses the US Dollar as a comparison medium for value, the focus has been on stacking satsoshis.
2. Long-term holders can also have other primary goals while having financial gains as secondary driving factor. Some of these are the following:
  - a. Use bitcoin as a store of value to circumvent the effects of inflation.
  - b. To subvert government currency controls, especially in authoritarian countries like Venezuela where the local currency lost its value due to hyperinflation.
  - c. And in some cases, to bring about bitcoin’s revolution.

It is a conclusion that the last two mentioned reasons, namely, the anti-authoritarian and revolutionary aspects of adoption, will eventually merge and become a primary reason and main driving force of adoption in the future.

Bitcoin’s previous driving factors are no longer present due to the perception of value formation that Bitcoin holds. Previously, between 2009 and 2011, users were more interested about the underlying technology and not in its possible monetary gains that a future appreciation of its value could bring about. This has been rapidly phased into the background as speculation comes to the forefront among users. During this period users destroyed countless bitcoins, either by accidentally deleting wallet data files, throwing out private keys into the trash or encountering a catastrophic hardware failure. At that time the value was so marginal that there was no such sense of loss present when bitcoins were lost forever.

The largest discovery of this Thesis is the interwoven effect that fiat currencies have on human behavior, which appears to naturally raise human time preference. This can be

explained by the fact that fiat currencies are extremely well integrated into western societies and **there is no** (government approved) *usable alternative*.

The effect that monetary nationalism has on society, through fiat currencies, is profound and extremely spread in the developed western world. The main problem that enables this effect is the **lack of choice**. When in a supermarket, we are swamped with the endless line of choices that are different in quality, size, and value. We are not limited to one bank account, we have choices, we can go with an expensive bank or a cheaper one where we don't have to pay high monthly fees. Of course, these will have different drawbacks and different terms which the bank will serve us by. Even browser software monopoly held by Microsoft on the Windows XP operation system was deemed unfair by the European Consumer Protection Agency, it has ruled that Microsoft must provide usable alternatives that fulfill all necessary criteria for protecting users and providing an adequate level of choice.

Negative effects can also be observed when we remove the option of choice among consumer products. For example, rural American farms with limited infrastructure often face the fact that they only have one internet service provider that provides extremely limited, inferior service for consumers. Medical products that don't have alternative generic forms, often have higher prices, or if a pharmaceutical company has a monopoly or a patent on a medical product it has the incentive to ratchet up the price to produce profits. Similar has happened with the EpiPen and Daraprim in the United States. (Pollack; Rapaport)

There is a very similar effect in relation to lack of choice with fiat currencies. Due to state nationalism, the usage of currency is mandated by a sovereign nation. The sovereign nation exercises its right to self-determination and existence as a country through the issuance of a national currency. This is done through a national central bank that manages the currency and its issuance. When the currency is issued, then the usage of that currency is enforced by that sovereign nation's military. When a currency has its stability manipulated, extremely negative effects can be observed. The hyperinflation of the German Mark and that of the Venezuelan Bolivar prove that there are direct consequences when the value diminishes from within a currency. Social structure breaks down and occurrence of a revolution becomes a possibility. But these only become apparent when the effect of value diminishment is faster than how an economy can adapt to the changed situation and valuation of a currency.

When a currency has its value slowly decreased, lack of savings becomes the norm among members of society, which in return accelerates the usage of credit. Consumer credit, especially in the United States, is an important aspect of participation in the economy. Banks

often base their decisions on these credit ratings and set their fee structures and offers accordingly for individuals. The US Dollar keeps losing value and interest rates are ever increasingly cut, it becomes less feasible to save money. Since banks are operating under a total reserve ratio set by a central bank, the endless cycle of issuance of currency is accelerated.

The United States Dollar has lost over 95% of its value since 1913, and this is not a coincidence that correlates with the establishment of the US Federal Reserve Bank. As of today, inflation rates are marginally kept under control while the printing of money keeps happening to fund government operations by expanding the debt ceiling. When a currency loses this much of its value, extremely low rates of inflation can cause problems also. For example, this effect can be observed in the rise of the price of consumer products or in the loss of value of a national currency towards another currency.

The gradual decline creates an environment where immediate profit is necessary for the functioning of an economy, where everyone must produce money constantly and keep up spending. This is accelerated by credit lines where individuals can drive up their debt to be able to fulfill their immediately needs. The economy within an inflationary environment is designed to operate in a profit-oriented manner that seeks to gain profit by all means necessary. Shareholders demand profits from companies and because of that high-time preference environment were created to enforce the spending habits of consumers and to influence that further through company policy enforced by shareholders will and vote.

This directly creates overspending, defaults for individuals on loans and less economic stability for an individual to function within society. Since money is required for the proper functioning of an individual in society, safety nets providing individuals with fiat currencies further act as a destabilizing factor.

### **Next Stop: Terminus**

*“Change here to the Moon and beyond.”*

The system we live in is designed to work like this since governments do not know other alternatives to be able to compete against other competing states. As of today, Keynesian Economics is taught all around the world in higher education as the de-facto standard of the basis of the global economic world order. If a nation attempts to step outside the boundaries of that system, then the consequences are immediate and will negatively affect its citizens. Since the rules of competition is based upon these standards, the participants must organize themselves along the lines that can keep an economy functioning while increasing the GDP constantly. It is not possible to determine whether this system was designed with malice, but evidence within this Thesis seems to suggest the fact that this system was engineered to keep members of society under control. We can also see that as the system was built out, the goal to become superior has become the forefront goal of countries. This is deeply rooted in the ability of the United States to manipulate its currency and use its economic and political might to exercise control over the political order of the world. As the gold backing of the US dollar was manipulated slowly and then removed suddenly, it started off a cascade of events that keeps leading us towards economic bubbles and extreme polarization of society and politics.

The only solution that could solve this problem is to return to a monetary system that is based upon a sound monetary medium. But this is not possible anymore. Since a return to the gold standard could potentially give the competitive edge to a hostile nation that another might not want to happen, therefore, this becomes an impossible choice for a government. Return of the gold standard would also change consumer behavior, and a complete change of the economic model and how the world produces goods would be also required. Moreover, the possibility of a failure of such a process is extremely high if it is not professionally managed by a government. Communism's failure in the Soviet Union clearly shows that governments are especially bad at managing centrally planned economies and they are destined to failure.

One of the possible solutions for this problem is to abolish the usage of paper currencies all together and to return to an economic model based on bartering. But because of the advanced state of civilization where most human beings in western societies live in large population centers where land is limited, it is no longer possible to produce products

to barter with them, except in the services sector. Therefore, a return to such a system is impossible.

The only alternative that remains to fix this problem is the total abolishment of the central banking system and the creation of separation between state and currency. Governments although would never allow such change to happen, because it removes too much power from them and places it back into the hands of the people. Therefore, the solution must come from the people who can initiate this change; only the people can bring about a global restructuring and reformation of the socio-economic-political order.

But fortunately, even if governments would not want it, this reformation of the world's socio-economic-political order is already underway as a direct effect of the digital sovereign money<sup>56</sup> that operates on the Internet under the name Bitcoin with the trade ticker BTC (or XBT). This process has reached the point of no return and can no longer be stopped by anyone. Slowing down the process is certainly possible, but just temporarily. If anyone would attempt to attack Bitcoin, one of the protective layers of its ecosystem will eventually enact mutations to the system (just like a virus would mutate through DNA proof-reading as it copies itself) and it will become stronger and more resistant to further attacks, incurring more higher costs and more time to make further attempts.

Any form of attack can target Bitcoin, but as long as there are people out there who are willing to acquire bitcoins and hold them long term, with that giving value for each individual coin, which is limited at 21 million coins, the effects of bitcoin will continue and will go on until Bitcoin eventually changes the world, permanently.

Due to National Central Banking becoming an obsolete institution, with that immediately phasing out Keynesian Economic norms, no further analysis of the trust problem (related to fiat money) is required, because *Bitcoin fixes this*.

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<sup>56</sup> A form of money that cannot be confiscated or controlled by governments and cannot be impeded upon by any law, judges, or sovereign nation's military. This is because of the provided option for individuals to refuse cooperation by imposed violence. If an individual refuse to hand over the private keys or passphrases, extraordinarily little can be done outside of the avenues of physical violence to coerce its extraction. Even if such physical violence is exercised, tricks can be employed to trick attackers to think there are limited amounts of bitcoins available for extraction from one individual's possession, this is called as 'plausible deniability'.

## Appendix 1: The Bitcoiner's Lexicon

### *Satoshi Nakamoto*

Pseudonymous programmer and cypherpunk, creator of Bitcoin. Has disappeared in 2014 and no plausible evidence exists that he ever attempted to communicate with anyone afterwards. His whereabouts are unknown to us all.

### *Hal Finney*

Hal Finney was the first recipient of bitcoins mined by Satoshi Nakamoto, he has worked and communicated with Satoshi Nakamoto in the past. The term “running bitcoin” was coined by him when he tweeted that he is running Bitcoin software for the first time. Hal Finney was battling Amyotrophic lateral sclerosis, after death was frozen by the Alcor Life Extension Foundation and his body is being cryogenically preserved for a potential later revival.

### *Hodl*

Hodl comes from a possible miss-spelling of the word hold, which means holding bitcoins in this context. Some users argue that the intoxication of a forum user on the BitcoinTalk forums were the origin of this coined term when he misspelled it, others claim that it is a complex acronym of “hold on for dear life” aka hodl.

Hodl in this concept reached a form of cultural behavioral norm where users of bitcoin are expected to hold bitcoin long term to enforce the network effect on the price of bitcoin by removing bitcoin liquidity from exchanges with that tightening the order books that contain available traded bitcoins on offer. The basis of “hodling” seems in some sense to provide the basic price of bitcoin, because a bitcoin can be owned physically if someone is within possession of his own private key and can verify that his coins are present on those addresses associated with his private key.

### *1 BTC = 1 BTC*

This refers to the fact that 1 BTC will always equal 1 BTC because there is no central authority to inflate the money supply of Bitcoin. Therefore 1 BTC will always worth 1 BTC on the Bitcoin Protocol.

*'Sup Freaks*

A catch phrase used by Marty Bent on the Tails from the Crypt Bitcoin Podcast.

*Sovereign Individual*

A person that is independent that of nations and not restricted by borders, a true free individual who is in control his own destiny within the free market economy.

*Brrr*

It is the sound that a money printer machine makes when it prints new money. This have become popular during the 2019-2020- COVID-19 Pandemic. The United States' Federal Reserve have begun its quantitative easing program in response to battle the global COVID-19 pandemic, this resulted in the creation of multi-trillion dollars and the expansion of the money supply. (IMRD)

*Don't Trust, Verify.*

A techno-philosophical approach towards the verification of aspects of reality, not just within computer science. It heeds users of Bitcoin to don't trust information they see and instead go to extra lengths to verify their truth content by themselves.

*Stacking Sats*

Stacking Sats was a term used by Marty Bent on the Tails from the Crypt podcast where he references the repeat purchases of bitcoins in its fractional units, satoshis as a process of stacking these units into larger stacks.

*Toxic Bitcoin Maximalist*

Individuals who advocate for the rejection all forms of alternative currencies; they fully support the use of Bitcoin only. They advocate for the development of the technology and endlessly educate potential users about its use and efficacy.

*Bitcoin Plebs*

Common every day users of bitcoin, (mostly bitcoin maximalists), who reject ideologies spread by influencers on the internet. They support self-education and self-awareness in the bitcoin space. The Bitcoin Plebs group was started on Twitter in response to the doxing attempt against the pseudonymous bitcoiner Hodlonaut, the group later moved onto Telegram where it operates uninterrupted even today. The Bitcoin Plebs are active users of Twitter.

Their group can be accessed with this link: [t.me/BitcoinPlebs](https://t.me/BitcoinPlebs)

*Taco Carnivore Bitcoin Plebs*

A splinter group that decided to form a separate Telegram group after the decentralization attempts of the original Bitcoin Plebs Telegram group. Their members advocate for the total rejection of all forms “shitcoinery”. They often engage other bitcoiners also who they perceive as not adhering completely to the expected standards of bitcoin maximalism. This has led to many members of the group separating based on ideological lines. Most users in this group are also still members of the original Bitcoin Plebs group.

Their group can be access with this link: [t.me/TacoCarnivoreBitcoinPlebs](https://t.me/TacoCarnivoreBitcoinPlebs)

*O.G. Bitcoiner*

Original Gangster. It is an acronym that come to mean that someone is a long-time participant individual who is unique in every aspect within the Bitcoin community.

*Influencer*

A person who influencers people in the real world with their speeches and activities, attempting to influence their activities and behaviours. They often run Podcasts.

*UASF*

Was titled the User Activated Soft-Fork as part of Bitcoin Improvement Proposal 148. It is often mistaken for the abbreviation of the US Air Force. It mentioned the first militarization of the community that stood up against third party attackers that seek to profit from the bitcoin protocol’s forceful changes.

*NO2X*

The No 2X movement was a community action by bitcoiners who refused to comply with miners demands to activate Segwit-2MB block increase, the miners lost the war and it was never activated.

*#WeAreAllHodlonaut*

Was a campaign by Bitcoiners on Twitter in response to the doxing attempts against Hodlonaut who deleted all his social media accounts due to fears of safety for his physical safety and to protect his identity. Bitcoiners changed their avatars to the avatar of Hodlonaut, which is an Astronaut Space Cat, with that symbolically defending Hodlonaut.

*Myth of the Bitcoin Time-Traveler*

The story of the Bitcoin Time Traveler titled *"I am a time-traveler from the future, here to beg you to stop what you are doing."* is a message posted onto the popular message board Reddit by a non-existing anonymous reddit user. On the post, the user describes the effects of bitcoin on the future and talks about how it is going to end up causing a damaged dystopian future. The post initially was called into question, if it can be a considered a credible warning since the reddit user's account could not be loaded anymore. Based on a popular myth, if the user changed the effects of history by describing the future, the outcome of the future potentially has changed and that could be a reason for the missing account. Since the time traveler did not have to return back to the past, then the account is was never created. On the 27<sup>th</sup> of October 2019, the reddit post was modified describing the dangers of reckless investing, the account's profile is still leading to a non-existent page, some speculate that this might have been manipulated by twitter moderators to downplay the message's importance.

*bcash*

Is a derogatory slang name of Bitcoin Cash, but alternative forms are also used like: bcrash and btrash.

*Bitcoin Citadel*

The concept of Bitcoin Citadels originates from the reddit post of the Bitcoin Time-Traveler who described fortified gated communities as quasi citadels where bitcoin users concentrate to protect themselves from those that are hostile towards users of Bitcoin. As of today, there are many discussions about the existence of these citadels and has become a quasi-meme among bitcoiners.

Pseudonymous Twitter user FartFace2000 (FF2K) has pledged that if the value of bitcoin rises up again, he will re-structure his construction business to specialize in the planning and building of real-life bitcoin citadels.

*Antifragile*

Antifragile is the antonym of fragile, a state that when put out to effects of shocks and damage, it becomes better instead of breaking apart. It is also the title of a Book popular among Bitcoiners that was written by Nassim Nicholas Taleb. The book also talks about the effects of antifragile systems that benefit from disorder, such system like Bitcoin.

(Taleb, Antifragile)

*6.15 BTC*

6.15 BTC, pronounced as six-point-five bee-tee-cee, is a meme created on the online discussion board Reddit by a Twitter user @american\_hodl (currently running under @hodl\_american username on Twitter because of a repeated suspension), who has been previously banned multiple times on the social media platform due to his repeated breaking of rules because of his persistent issues with his obsessive defiance disorder. His coining of the term created an over sexualized version of immense reward of bitcoin ownership in perspective of the future. As @american\_hodl claims, the 6.15 BTC equals infinite riches and “big titty bitches”. This sexualization of bitcoin ownership coincides with previous version of Lamborghini ownership as a sign of success within the bitcoin space.

*Paralelní Polis*

Paralelní Polis is a bitcoin café, hackerspace and cryptoanarchist hangout in Prague-Holešovice, Czechia. They only accept cryptocurrencies as payment option. It gives home to the annual Hacker’s Congress. Founded by Slovakian hackers and Artists and Activists from Czechia to advocate for liberation of society and use of advanced technologies that help this process. Can be found at Dělnická 475, 170 00 Praha 7-Holešovice

*Hacker's Congress Paralelní Polis*

Is a major cryptoanarchist conference in Prague, Czechia. The conference often brings about a large bases of users (annually since 2014) who are interested in the topics related to Bitcoin, cryptocurrencies, hacking, cryptoanarchy, liberty, science, libertarianism, and privacy. Hacker's Congress is now a large international event attracting attendees from all over the world. The congress often partners with La Fabrika to provide conference space for the event.

*Paralelná Polis*

Paralelná Polis is a bitcoin café, hackerspace and cryptoanarchist hangout in Bratislava, Slovakia. It was founded by some of the original Slovakian hackers who also helped found Paralelní Polis in Prague. They also strive to advocate the liberation of society and the use of technologies that help achieve these goals. Can be found at Kominárska 1552/3a, 831 04 Bratislava

*Boating Accident*

Bitcoiners often joke with the term boating accident, when referring to losing their wallet. Often this is used as plausible deniability, claiming that they lost their wallet and there are no more copies of their private key to access their funds.

*BTFD*

Buy the Fucking Dip is a slang term used by Bitcoiners when the price of bitcoin goes lower or crashes more in USD price, with that telling each other to buy more bitcoin.

*Not your keys, not your coins*

Is a term that refers to the ownership of the private key, custodial exchanges do not provide the private key to users therefore they are not in possession of their own coins because the custodial is in possession of it while providing an IOU (I owe you) type of bitcoin substitute that buyers can possibly withdraw from exchanges. Exchange hacks often results with the exchange's bitcoins becoming stolen, if someone doesn't hold their own private key then they simply don't own their coins.

*Bitko*

Bitko, the Bitcoin Monster, the Apex Predator of Fiat Currencies. Imaginary Bitcoin monster drawn by the artist Bitko Yinowsky. The creature is a funny B figure with a single eye in the upper hole of the character B and the lower hole is his mouth, he have a long tongue and likes to feast on fiat currencies.

*Satoshi's Place*

It is an online drawing board where users can donate satoshis over the lightning network and can place coloured pixels onto the board.

*Satoshi Games*

An independent game developer studio creating creative games that can interact with the lightning network. They create browser-based games that can be played on the internet.

*Lightnite*

A Battle Royale like 3D action game that gives rewards for player in satoshis for activities that they can withdraw from the game. It is still currently in development.

*Shitcoin*

Shitcoin is a derogatory term that attempts to display disdain with the existence of alternative cryptocurrencies that were created to attempt to replicate the effects of bitcoin. Since bitcoin over the years seen massive appreciation of value, those with capabilities to alter the source code of bitcoin began developing alternatives and “improved” iterations of the original bitcoin. This has led to a massive economy of “shitcoins” of over 10000 cryptocurrencies and tokens circulating on their own respective blockchain networks or glorified MySQL databases. As programmable additions were created also under the so called smart-contract variant blockchains, it has enabled and accelerated the creation of scam tokens and speculative assets that saw their prices being pump and dumped as speculators began using them to produce profits on their volatility. Since most of these alternative blockchains have very little proof of work securing their blockchain, a direct attack by a nation state or even by a bitcoin miner with larger E/Hs mining power, they could potentially destroy these chains by participating in a 51% double spend attack on these networks. Since “shitcoins” do not enable anything else other than the advancement of the inherent human greed. Bitcoiners coined the term “shitcoin” for their identification since they are in quality and

property are much more inferior to that of bitcoin. Shitcoins also can be a form of attack on the bitcoin ecosystem, because whenever a new coin is created, new speculators are pulled into it and with that potentially removing more available value flow from bitcoin, with that slowing down its adoption process. The word can also be used as an adjective to refer to those who use shitcoins.

### *Room 77*

Is a café in Berlin that accepts Bitcoin as a currency and regularly hosts the biggest regular Bitcoin meetup in Berlin, Germany. Can be found at Graefestraße 77, 10967 Berlin

### *When Moon?*

The phrase When Moon in the bitcoin community refers to expected profits with the USD price of bitcoin. Since trading platforms often utilize candles to trade, their increments often symbolize rocket spaceship like lift-offs that seem like the price of bitcoin is headed towards the moon. Therefore, speculator users began coining the term when moon or mooning to describe either a question of potential lift-off in price or the currently ongoing positive price changes of bitcoin.

### *When Lambo?*

When Lambo and When Moon are terms associated with the impending profits experienced by speculating individuals. Usual behavior can be observed in chat rooms and online discussion boards and the social media site Twitter. Lamborghini ownership within the bitcoin space began symbolizing immense success within the space. As the astronomical rise in the USD price of bitcoin made it possible for many early holders of bitcoin to be able to afford iconic creations of the Italian super sports car manufacturer Lamborghini. Often owners of Lamborghinis placed custom license plates on their cars brandishing their origin of wealth or affiliation towards bitcoin.

*Faketoshi*

Self-proclaimed Satoshi Nakamoto and serial fraudster Craig Steven Wright<sup>57</sup> received this nick due to his repeated claims to be the bitcoin inventor Satoshi Nakamoto. Faketoshi is now also used as a term for anyone who claims to be Satoshi Nakamoto, it is widely understood by bitcoiners that Satoshi Nakamoto has left the space this way to protect his creation against interference that wants to use him to destroy it.

*Babies are dying!*

It was a viral phrase Roger K Ver bcash (BCH) founder have uttered during a conference claiming that the original Bitcoin is killing babies in war and famine torn countries. Bitcoiners were quick to turn it into a meme online.

*Two weeks™*

A phrase often associated with software that is built upon bitcoin, it means that something will be ready when it is ready. Usually not within two weeks.

*Vires in Numeris*

Strength in Numbers. It is the official latin motto of Bitcoin Protocol.

*Bitcoin fixes this*

It is a term used to refer to problems that can be solved by Bitcoin, due to Bitcoin's overwhelming effect on politics, society and economics, the problems that Bitcoin can fix seem to make up a very long and diverse list, therefore Bitcoiners often use this term liberally.

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<sup>57</sup> It was proven in US district of Florida court that Craig S. Wright multiple times mislead the court about his claimed identity, showing forged documents, manipulated screenshots of applications, and claiming that aged shelf companies were holding his genesis block coins that a bonded courier were supposed to bring him that allows him to access the coins.

## **Appendix 2: Cryptographic Proofs**

### Author's Previous Versioning Attestation via OpenTimeStamps.org

Name: FORRELEASE-2020-Thesis.docx

Size: 423185 bytes (413 KiB)

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Author: Karo Zagorus

PGP of Author: 8E06 CD76 ACE6 1F00

Latest Bitcoin Block: 00000000000000000000c4cd95acf70721608cc93c938a46e09f2a2a02f785abc



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